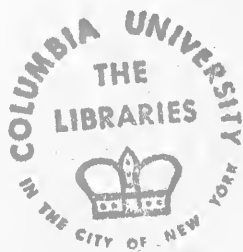


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Chas. M. Fowler

DISEASES OF WOMEN

AND

ABDOMINAL SURGERY.

BY

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PREFACE.

IN the preface to my first work of this kind, which appeared in 1877, I urged a "plea that any new effort to extend our acquaintance with the Special Diseases of Women deserves at least to be received with patience." This plea was, to a very large extent, disregarded, and the method in which my little effort was received was speedily manifested in two wholly different and, I am bound to state, wholly unexpected directions. The first direction to be indicated is, of course, the most extended, and that consisted of ridicule, abuse, and misrepresentation.

The second direction was to me, however, far more important, and I soon ceased to trouble about the other. A small band of younger and more earnest men came to see and judge for themselves, and were speedily converted to the belief that a new field of work had appeared: and many who had started with a sneer at the "Birmingham School of Gynaecology" remained to speak of it with respect, to adopt its methods, and become its earnest and progressive disciples.

It is curious, as a mere little bit of history, to read the reviews of my work of 1877, and to read as a contrast the impression it has created in ten years as indicated in the pages of such a masterly work as Greig Smith's book on Abdominal Surgery, 1887.

What I am now saying must of course appear as the outcome of egotism, but I must give it as the reason and

explanation of much I have to include in the present work, and as a justification for my expressions of unbounded gratitude to the members of the American medical profession who have done so much to aid me in what has been accomplished. To many continental friends—Italian, French, Danish, and a few German—I have also a debt of acknowledgment to offer for their support and their candid acknowledgment of the value of what they have seen for themselves.

During the period of these ten years Gynaecology and Abdominal Surgery have made marvellous advances. The old-fashioned mechanical school—the teaching of the speculum, the sound, the caustic stick, and the pessary—has been practically killed, and an advanced eclecticism now prevails. This has largely grown out of the wonderful revelations obtained by the experiences of operative surgery. In 1877 Spencer Wells left ovariectomy where it had been for half-a-century before him, with a mortality of one in four. Now it has a death-rate of a little more than three in a hundred, and this fact alone has given an impetus to and a facility for the alleviation of suffering in other directions, of the value of which the most enthusiastic estimates that have yet appeared, probably fall quite short.

The present work professes to deal with “Diseases of Women and Abdominal Surgery,” a title which records the historical fact that the evolution of abdominal surgery has proceeded entirely from the necessities of the special diseases of women, and their combination is now so complete that it is unlikely they will ever be again separated. The day has gone by when

the treatment of pelvic and abdominal diseases, so prevalent amongst women and relatively so rare amongst men, was regarded as a mere appendix to the work of the accoucheur. It has gone as completely as the day when diseases of the eye were dealt with in a chapter appended to a text book on the practice of medicine. Gynaecology and obstetrics are now happily severed, and this division of labour has resulted in enormous advances for both.

In the plan of the present book I have followed the scheme of my first publication. "My chief object is to offer the results of my own experiences in as condensed a form as possible." If the present edition is to have any value it can arise only from what I have to say of my own work. If I fail there I do not care to succeed by padding it with extracts from the work of others. Nor can I imagine it possible that any modern gynaecologist, whether he accepts my views or not, could conscientiously say that my work has not been extensive enough to entitle me to express my convictions concerning it.

BIRMINGHAM, *April 16th, 1889.*

TABLE OF THE ORGANS CONCERNED

I.—MONS VENERIS.

II.—VULVA:—

Labia Majora.

Labia Minora.

Hymen and Carunculæ Myrtiliformes.

Clitoris.

Meatus Urinarius.

Vulvo-vaginal Glands.

Perinaeum.

III.—VAGINA, URETHRA, AND BLADDER.

IV.—UTERUS:—

Os.

Cervix.

Fundus.

V.—BROAD LIGAMENTS AND MESENTERY

VI.—FALLOPIAN TUBES.

VII.—OVARIES.

VIII.—PELVIC BONES.

IX.—LIVER AND GALL BLADDER.

X.—KIDNEYS, SPLEEN, AND PANCREAS.

XI.—COLON, RECTUM, CÆCUM, AND SMALL INTESTINES.

XII.—BREAST.

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Fig. 1.—Sagittal lateral section (right) of pelvis, with extra-uterine gestation in right broad ligament.

Fig. 2.—Sagittal mesial section of the same pelvis, showing uterus with decidua. This section demonstrates, inter alia, that what is termed clinically retro-uterine hæmatocele may be hæmatoma.

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Fig. 3.—Sagittal mesial section of cadaver, with advanced extra-uterine gestation—sub-peritoneo-abdominal (1R).

PLATE III.—p. 527.

Fig. 5.—Sagittal lateral (2L) of same.

Fig. 6.—Sagittal lateral (3L) of same.

INTRODUCTORY.

ANATOMY OF THE ABDOMINAL AND PELVIC ORGANS.

I SHOULD have been little disposed to enter upon this subject were I not satisfied that great misrepresentation of the relations of the abdominal and pelvic organs exists in the ordinary text books of anatomy. The dissecting room method is very useful in enabling the student to use his fingers, and to become familiar with the appearance of dead tissues. But it is a most misleading method so far as conveying any impression of the mutual relations of structures and organs. To obtain a clear and accurate idea of the relations of the abdominal and pelvic organs the only trustworthy method is the study of frozen sections of the cadaver.

If the physicians who write theoretical papers on the positions of the uterus, its flexions and versions, would study these sections they would soon be persuaded that the uterus varies its positions greatly according to the state of the rectum, and to the stages of development. (See Fig. 1.)

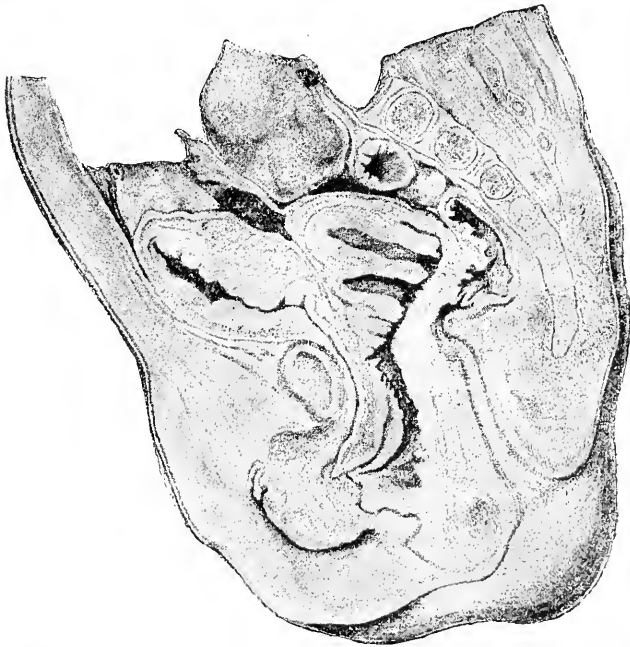


FIG. 1.—Median section of frozen pelvis of new-born child. Note that the vagina is relatively very large, and that the cervical part of uterus is quite half of the organ. The organ has its normal (infantile) position of marked anteversion.

(Section made by Prof. Cunningham, F.R.S., and drawn for me by Mr. R. Mannix, Dublin.)

The exact facts of the method of closure of the vagina and of the distended rectum with the real relations of the peritoneum were first displayed to my astonished gaze some years ago in a section (Fig. 2) shown to me by my friend Professor Cunningham, of Dublin; and I have since verified them repeatedly.



FIG. 2.—Section in median plane of frozen adult female pelvis. Before the specimen thawed the coils of small intestines were removed from the pelvis, leaving other viscera in absolutely accurate position. Cadaver aet 40. Uterus anteverted and turned somewhat to right, therefore not cut in median line of organ.
(Prof. Cunningham and Mr. R. Mannix.)

I have found it necessary since then to correct a large number of erroneous convictions concerning the abdominal and pelvic viscera which I had derived from the old dissecting room teaching.

As much of the pathology of the special diseases of the sexual organs of women find instructive parallels in the diseases of the organs of the male, I have thought it well to append the late Dr. Morrison Watson's table of Developmental Transformations (*Journal of Anatomy and Physiology*, October, 1879):—

Male.	WOLFFIAN DUCTS.	Female.
Convuluted Tube of Epididymis.	1. Upper Part.	Tube of Epoophoron.
Vas deferens and vesiculæ seminales.	2. Lower Part.	{ Ducts of Gaertner in conception and pregnancy.

MÜLLERIAN DUCTS.

Hydatid of Morgagni.	1. Upper extremity.	{ Fimbriated extremity Fallopian tube.
Tubular prolongation of vesicula prostatica.	2. Middle Part.	Fallopian Tube.
Vesicula prostatica.	3. Lower Part.	Vagina and Uterus.

SINUS URO-GENITALIS.

Upper portion, prostate urethra.	1. Upper part of urinary pedicle.	{ Urethra.
Lower portion, prostate urethra and membra- nous portion.	2. Lower Part.	Vestibule.
Cowper's glands.	3. Blastema.	Bartholini's glands.
Crura and corpus penis.	4. Corpora cavernosa.	{ Crura and corpus clitoridis.
Glans penis and corpus spongiosum urethrae.	5. Corpora spongiosa.	{ Glans clitoridis and vaginal bulbs.
Scrotum and raphé.	6. Genital ridges.	Labia majora.

That the study and practice of Diseases of Women should become a speciality was inevitable so soon as the advancement of medicine was great enough to admit of the division of labour. The introduction of that great principle has been, in its turn, an instrument of immense importance in the advance of our art; and, though it is the habit of the good old-fashioned physician to sneer at specialities and specialists, they are as useful and as irresistible in surgery as in any other development of human science.

The great function of a woman's life has for years made her the subject of specialists, male and female, the obstetricians. The subsidiary relations of her special organs and the special acquirements of her physique, based upon these, have necessitated the establishment of another class of specialist, the gynæcologist, and within the last few years an enormous advance has been made as the direct outcome of this further extension of the principle of the division of labour.

Of all human studies that of disease is the most interesting, for it is the most mysterious, and most resists the efforts we make to solve its mysteries. After we have mastered the physiology of a flower, of a cray-fish, of a guinea-pig, of a dog, and, finally, of man himself, we are pretty much where we were when we come to deal with the processes of disease. It is true that we are greatly aided by our knowledge of the details of healthy processes in our efforts to imagine what ought to take place in the production of a morbid growth; but, as a matter of fact, when

we try to force our facts of physiology into our treatment of disease we are beaten far oftener than we are victorious.

The facts of physiology, so far as we know them, are, with a few trifling exceptions, the same for man as for woman. Leaving out of question the differences between the follicular cell growth of the ovary and the epithelial transformation in the testicle, and the special function of conception and parturition, the statements in the physiological text books for men and women are the same. And yet the facts of disease are exactly the opposite. There is hardly a disease which does not show manifest differences in the sexes. Women suffer from hosts of special diseases, and men have hardly any special diseases at all. Oliver Wendell Holmes, not a gynaecologist, but a hard and dry anatomist, although a poet and philosopher, tells us the dramatic story in *Elsie Venner*. "She was consequently, in plain English, overworked, and an overworked woman is always a sad sight—sadder a great deal than an overworked man, because she is so much more fertile in capacities of suffering than a man. She has so many varieties of headache—sometimes as if Jael were driving the nail that killed Sisera into her temples—sometimes letting her work with half her brain, while the other half throbs as if it would go to pieces—sometimes tightening round the brows as if her capband were a ring of iron—and then her neuralgias, and her backaches, and her fits of depression in which she thinks she is nothing, and less than nothing, and those paroxysms which men speak slightly of as hysterical—convulsions, that is all, only not commonly fatal ones—to many trials which belong to her fine and mobile nature—that she is always entitled to pity when she is placed in conditions which develop her nervous tendencies."

For the greater part of my life I have been engaged in the study of and practice amongst the special diseases of women, and no conclusion is more firmly rooted in my mind than a devout thankfulness that I belong to the other sex. A wise Frenchman anticipated this conclusion in the brief sentence: "*La femme est une malade.*" From the cradle to puberty they seem to be on fairly equal terms with men, but from that moment, through the whole of the period of active life, their existence is one of prolonged suffering. The great function of their lives is led up to by troubles, and from it endless suffering springs. This seems to be the lot of civilised women only, and to be the result of this civilization—why we know not, we cannot even guess. Take the case of a half savage negro woman, working in a sugar field. The pains of labour will come upon her, she will go on working till her child is almost born, she will then retire to some secluded spot, alone and unattended, will go through her travail and return to her field work in an hour or two. Such a proceeding would be certain death to a woman living under the complex conditions of

civilization, the blessings of which seem to bring their corresponding curses with them.

I.

EXTERNAL GENITALS.

In both men and women special ailments are always regarded with especial dread for social as well as medical reasons. A woman suffering from any pelvic ailment, even disordered menstruation, is always specially anxious to conceal her trouble, or at least the nature of it, from the feeling that there is always an element of reproach about such diseases. Even the fact that they are menstruating, women will do everything they possibly can to conceal, and they will dance all night, when they are really hardly able to crawl, rather than admit that there is anything the matter with them. In this way they succeed in bringing serious trouble on themselves, and in aggravating small ailments into serious disorders.

Diseases of the skin affecting the genitals of women are fertile sources of distress. Amongst single women they give rise to intolerable mental anguish lest their accidental discovery by friends or attendants might give rise to the suspicion of unchastity, and in a married woman I have more than once known the appearance of a harmless pityriasis versicolor on the Mons Veneris give rise to the dreadful idea of her husband's infidelity.

This disease is very troublesome, but it is perfectly harmless, and but for the disfigurement induced by it, might very well be let alone. It is specially prone to occur on consumptive patients, and its eradication from them is often impracticable. In perfectly healthy girls of cleanly habits it often infects the mons and folds of the groins, appearing in the summer and disappearing in the cold weather. In some cases it is confined to these parts, but generally may be found in the shoulders and back. It is of a reddish brown colour, the brown tone prevailing when it is chronic and has been neglected. It is slightly raised above the level of the healthy skin, specially at its advancing margins. It is distributed generally in spots, but whole regions of skin may be affected, and its distribution in inveterate cases is symmetrical. If the spots be scraped it will be found that the epithelium is more readily removed from them than it is from the healthy skin. If the scrapings be treated with liquor potassæ and examined under the microscope with a power of $\times 250$, the characteristic *racemous conidia* of the *microsporon furfur* will make the diagnosis certain.

By most authorities this fungus is regarded as the cause of the disease, but I am disposed to doubt this, and chiefly for the reason that the disease is most certainly not contagious. I have

seen a large number of cases in private practice of this disease on the genital districts of both men and women who were married, and I have always failed to find out on enquiry that it was communicated to the patient's partner. Moreover, in those who habitually suffer from it the disease takes on a semi-acute form, every now and then, in the folds of the groin. At these times, and in the discharge and disorganised epithelium shed in large quantities, neither the fungus nor its spores are to be found in the quantities which would certainly exist if they were the cause and not (as I believe) the consequences of the disease. We have been too much in the habit of forgetting that many fungi grow only on trees that are dead. We have been apt to put the cart before the horse about these diseases, and to place a result of decomposition in the place of the producer of the disease.

The presence of this eruption usually gives rise to no discomfort unless in the very hot weather it occurs abundantly in the groins, and if the patient is attentive to cleanliness it may exist altogether without her knowledge. The treatment consists in frequent baths, with a liberal use of soap and the application, after the skin has been well rubbed with a rough towel, of a lotion of an ounce of Sodium Hyposulphite to a pint of water. This was a prescription of the late Dr. Tilbury Fox, and certainly is extremely efficacious in at least temporarily relieving the disease. It was given on the supposition that it destroyed the parasite, and therefore removed the cause of the trouble. But many other and much more effectual parasitocides might be employed, such as Perchloride of Mercury, without influencing the disease one bit. The Hyposulphite of Soda, on the contrary, almost invariably causes the disease to disappear for a time, but even the most persistent application of it seldom effects a complete cure. It is, in fact, a very inveterate disease free from discomfort, and once a patient has been affected with it, very rarely indeed is a complete and permanent cure obtained. This is certainly the case when the disease attacks the genitals.

Alopecia.—The hair on the genitals may be removed by the same diseases which destroy it on other parts of the body. These are of two kinds, the first of which is the *alopecia areata* of the old writers, which removes the hair in patches. It is said by some authorities to be due to the presence of a fungoid parasite, the *microsporon Audouini*, but this has been contested by equally weighty opinions. Whether any of these skin eruptions depend for their existence on the parasites which are found in association with them is yet quite an open question. In the present case I think it more likely that the parasite is a coincidence, and due merely to the presence of disintegrating material which acts as a nidus for the spores. The peculiar distribution of the patches,

and severe neuralgic pain which accompanies and often precedes their appearance, make it more likely that they depend upon some neurosis. I have never seen this sort of baldness attack the genitals only.

The other disease by which hair is removed is essentially some error of nutrition of the hair bulbs, for it removes the hairs slowly and uniformly by gradually thinning them out. I have seen it attack the whole surface of the body and remove every hair in quite young women. I have also seen it attack certain regions only, as the scalp and genitals, whilst it left the hair in the armpits. It often dates from first labours with such a history as the following case gives:—F. J., married at the age of twenty. I had known her from childhood, and I certainly could not call to mind a healthier young woman in my acquaintance than she was, and her hair was one of the most striking of her many beauties. She had her first child at the age of twenty-two, and was attended by a gentleman who has given me the story of her labour, which contained no incident of any moment. She went on perfectly well until about the thirteenth day, when she had a slight rigor and a feverish attack, followed by desquamation. But there was not the slightest suspicion that there was any scarlet fever about, nor had she any other symptoms of that disease than the feverishness and subsequent desquamation. The desquamation was continued for several weeks, the skin came off slowly in patches, and it was then observed that the hair was falling off, and in about six weeks after her labour she had lost all her beautiful hair, her eyebrows and eyelashes, and their place was taken by a soft yellow down. In about three months the hair in her armpits and her pubis had also disappeared, and now at the age of thirty-two she remains in exactly the same position. The whole of the formerly hirsute parts of the body are covered by a short, soft yellow down. All kinds of remedies have been tried, but not the slightest influence has been exerted which has been effectual in restoring her hair.

I can call to mind a small group of three or four other cases more or less resembling this. In the first variety recovery generally takes place, and the hair is restored, but I never heard of such an ending to the second form. I do not know of any treatment which seems to have done good, though parasitocides, such as Mercuric Perchloride, are recommended by many dermatologists.

There is another variety of *Alopecia*, at least a disease of the skin, which is classed under that name, although I think that it is placed there erroneously, to which the name of *Alopecia Syphilitica* has been given. It consists clearly in a syphilitic atrophy of the hair bulbs, the hair becoming thin, short, and brittle, and it is characterised by very much the appearance which the hair has when it falls out after a severe attack of exanthematic

fever. This condition of *Alopecia Syphilitica* is very often seen in cases where the other symptoms of syphilis are not present. The best of all remedies is the complete shaving of all the affected parts, and the repetition of this process at intervals of a few days. It is very difficult to get patients to submit to this, because almost the last thing a woman will consent to is to have her head shaved, and many a good head of hair has been lost after an ordinary exanthematic attack, or an attack of protracted exhausting illness, by reason of the refusal of the patient to part temporarily with the small remnant of hair which has been left her. When the head is not shaved under these circumstances the hair rarely is restored to anything like its original healthy condition, but if the head is shaved and the process is repeated for a month or six weeks, the hair grows as well and often much better than it was before.

Lichen Simplex.—This consists of a punctate eruption, which is generally pretty diffusely spread over the body; but it is not unusual for the gynaecologist to be consulted about an eruption on the genitals, of an anomalous kind, which a little careful inspection will show to be an altered lichen. As an integral feature of this disease is a hyperæmia of the follicles, it has a very inveterate disposition, and is very difficult to cure. At first it attracts little attention and gives rise to little uneasiness, but as this uneasiness increases it alters its characters very much.

The alteration is due to the fact that the presence of any kind of eruption on the genitals of women is almost sure to be the source of so much irritation that relief is sought by scratching. The abrasions which result cause the papules to become pustules, so that what was originally simple lichen may appear like acne, or even furunculus.

It must be held as a rule, therefore, to examine carefully the skin elsewhere in all cases of eruption on the genitals before any opinion is expressed or any treatment advised.

This itching is a most distressing symptom, and it is generally the reason why medical assistance is sought. For its relief nothing is so essential as dryness; and the repeated use of puff powder is often sufficient alone to allay the irritation, and the addition of morphia or acetate of lead may prove of great service. If this fail, sponging the parts with a lotion of carbolic acid as strong as can be borne, and gradually increasing the strength of it, followed by puffing, will almost always succeed. Solutions of cocaine may also be used. For the general constitutional treatment, large doses of potassium acetate, colchicum and arsenic, are the most potent remedies, and it must always be taken into consideration that a lichenous eruption is an indication of some diathetic condition.

Lichen Syphiliticus.—This, like almost all other syphilitic eruptions, is found on the genitals; but not there only, so that it need hardly here engage our attention.

Eczema.—This is perhaps the most common form of skin disease met with on the genitals of women, whether in association with its simultaneous occurrence elsewhere on the body, or on the special organs only. It is seen in both its varieties of *E. simplex* and *E. rubrum*, but after it has been in existence for a short time these distinctions cease to be possible, on account of the alterations induced by scratching. I am quite certain that no disease to which the human body is subject, and which does not threaten life, succeeds in making its victim more utterly wretched than chronic eczema of the genitals.

I have seldom met with it in women not past the prime of life, and it is most frequently seen in those who have reached the climacteric period.

When found on the mons it has generally spread upwards from the labia, whence it will also be found to have extended over the folds of the groin to the thigh. Its most constant seat is on the inner surfaces of the labia.

It is rarely seen in its earlier stage, when vesicles are present; but when the patient, usually after long suffering, comes for advice, the whole organs are found red, hard, swollen, extremely painful, and exuding a large quantity of sero-purulent fluid. The distress is always increased by warmth in bed, so much so, indeed, that I have known a patient who habitually slept in a chair, with the genitals exposed to the air, that being the only position in which sleep could be obtained.

I shall refer to this disease at greater length when speaking of the labia, and until then I shall defer the consideration of the other skin diseases, with the exception of the two parasitic forms.

Scabies.—I have seen one well-marked instance of the ravages of the *acarus scabiei* upon the mons, thighs, and lower part of the abdomen, to which regions they seemed to have been transferred from the patient's hands. In this case, treatment had been given at various institutions without benefit, and 'probably because the hands had not been examined, and, therefore, the real nature of the eruption, which looked like *impetigo*, had not been suspected. A liberal supply of sulphur ointment brought immediate relief.

Pediculus pubis.—The effects of this parasite are rarely seen in women outside hospital practice; and usually they are sufficiently well known amongst the class of women whom they infect, as not to be seen frequently even in hospitals. Occasionally, however, a young woman presents herself with a large crop of

papules and pustules over the genitals, chiefly on the pubis, and the skin well marked with scratches, the whole trouble being due to the presence of a few pediculi. The suffering which these animals induce is often intense. The age of the patient is a very important matter in this case, for though they do occur in dirty women advanced in life, they are far more common in young women. An eruption on the genitals of a young woman ought at once, therefore, to excite suspicion of the presence of lice, and from their large size and dark colour they are easily found. One or two are enough to account for a very abundant eruption. The popular remedy for them is mercurial ointment, but a much safer one is a five per cent. solution of carbolic acid, a remedy which no parasite can resist. So much is this the case, that it is almost a rule with me to begin the treatment of all eruptions on the genitals of women with its employment for a week or two; for there is really no kind of eruption which may not depend upon, or at any rate favour, the presence of pediculi; and the result of their presence is sometimes so identical with the appearance of chronic eczema that the most experienced may be deceived.

Sometimes, in old women of dirty habits, an anomalous papular eruption present on the whole of the trunk, and accompanied by itching, intense on the genitals, will be found to be due to the presence of body lice. It will be readily cured by a carbolic acid lotion.

INFLAMMATIONS AND ULCERATIONS.

The Mons Veneris may be involved in any inflammatory attack which spreads from the abdominal parieties or from the vulva. Thus I have seen it included in the erythematous ring of an exceptionally severe gonorrhœa; and I have also seen it in the seat of very severe erysipelas, which had spread over the abdomen from a wound on the crest of the ilium, the result of a blow.

It is also the seat of chronic inflammation in cases of ectopia vesicæ, from the constant dribbling of the urine over it.

In cases where the external genitals are involved in the inflammatory process, there is always an amount of œdema greater than is seen elsewhere in the skin, except the eyelids.

In a case which I saw in consultation with my friend, Mr. A. P. Evans, of West Bromwich, in February, 1875, I found the mons and the contiguous skin to be the seat of chronic inflammation, which covered a diffuse abscess. This abscess had one opening into the bladder, and another out at the umbilicus. I made an opening through the skin of the mons, and passed a drainage tube out at the umbilicus. This had the effect of closing the opening in the bladder, but that at the umbilicus still remains.

I have also seen the mons the seat of a well-marked carbuncle.

Sometimes a syphilitic sore is found in this region, an experience which I twice had in hospital practice, in both cases the virus having probably infected previous abrasions due to scratching. Such a seat of infection is more common in the male, but its possibility in women must be borne in mind. Secondary specific ulcerations, in the form of suppurating gummatous patches, are frequently to be met with here: and in one case I have seen such a patch occupying the whole cavity of the umbilical depression, whilst the whole skin in the neighbourhood of the vulva was literally covered with similar formations, extending down the thighs and over the mons veneris.

Another form of syphilitic disease also found here is the tertiary indurated hypertrophy, a remarkable case of which I shall describe at length when speaking of the diseases of the labia. Sometimes this growth is so large as almost to constitute a tumour.

TUMOURS.

Besides simple cedema and the induration already spoken of, the mons may be the seat of tumours. The most common of these is the simple adipose hypertrophy which accompanies general abdominal obesity. This sometimes attains such magnitude as to be a source of great discomfort to the patient; for the fold of fat hanging down retains the secretion of the skin in the wrinkles, and gives rise to painful excoriations. In such cases, rigid attention to cleanliness and the liberal use of puff powder are requisite.

I have also seen an encysted lipoma of considerable size removed from the mons; and in earlier life I have seen hæmatomata, resulting from the brutal treatment of women by men of lower orders kicking them over the genitals. Such injuries are happily more rare in this country than they were thirty years ago.

The mons may also be invaded by the extension over it of epithelial cancer, and in one case I have seen it arise there.

CONGENITAL MALFORMATIONS.

These are almost entirely confined to defective development in cases of fissure of the pubic and hypogastric regions. This condition is generally associated with other more important malformations, as ectopia vesicæ, the existence of cloaca, etc. The pubic bones are insufficiently developed, being widely apart in front, no synchondrosis having been formed, a slender ligament alone representing what ought to have been a firm bony arch. The labia majora and minora are separated, and have no anterior commissure. The vagina is generally closed, and both uterus and

ovaries are absent, or indicated only by rudimentary structures. Fortunately, only few infants suffering from such deformities ever reach maturity, though some of them have to endure their miseries to an extreme old age.

A very curious case was sent to me some years ago by Dr. Boldero, of Penkridge. A woman of defective intellect had been taken advantage of by a farm labourer and became pregnant, though on examination of the parts by Dr. Boldero when called to her assistance in labour, it was difficult to understand how the pregnancy was secured, for the vulvar orifice did not seem to be larger than would admit a slate pencil. Dr. Boldero was in great trouble to determine exactly the relations of parts, and there was little wonder, for it turned out afterwards that a face presentation was driven through the soft tissues which represented the pubic arch. The pubic bones each ended in an acuminate ramus, leaving a space between them of nearly three inches, and the tissues then gave way under the uterine contractions in front instead of, as usual, behind, so that the bladder was torn in two and laid open, and a great deal of sloughing ensued. In fact, the rent had been extended almost into the peritoneal cavity in front. After her recovery the result was that almost the whole of the pelvic organs were extruded from this aperture, and were turned outside, the two ureters being visible in the inverted ruptured bladder.

II.

THE VULVA: LABIA MAJORA.

ERUPTIONS AND PARASITES.

Aphtha.—An unusual but very distinct form of eruption consists of aphthous patches on the vaginal mucous surface. In the acute form I have never seen it in adults, but I did once in a child about six years of age, where the appearances were identical with those seen in the mouths of children. But in the chronic form the disease is not at all uncommon, and is a source of great irritation. The vulva generally is reddened; and if the inner surfaces of the labia be examined, small dry spots are seen elevated above the surface, and of a white colour, the colour being due to altered epithelium, which may be scraped off without abrading the surface: and, amongst the cells, the spores and hyphæ of a fungus will be found. A lotion containing sodium hyposulphite is an unfailing remedy.

Eczema.—I have already spoken of this disease as affecting the mons, but when it does so it is generally as an extension upwards of the disease from the labia. In the few cases where I have seen the disease in an early stage, I have found it always to begin on the inner surface of the labia. The discharge between them is increased in quantity, and the usual itching is complained of. When they are separated and the inner surface examined, it will be found covered with small vesicles and abrasions, and no eruption will be found elsewhere on the genitals. But when the cases are seen in a far advanced stage, the mucous surface of the labia are found rather dry than otherwise, with the epithelium thick, white and sodden, especially at the anterior commissure where the chief distress lies. The labia are red, hard, fissured and swollen, and the disease may extend back round the anus, in the folds of the groins and up over the mons on the abdomen. Painful fissures exist at the anus and are the cause of great exacerbation of the patient's sufferings, and both skin and mucous membrane present the appearance of a washerwoman's hands, sodden with water. The disease is due to chronic inflammation of

the dermal papillæ, and is of a most intractable character. The utter wretchedness to which it sometimes reduces the sufferer is not greater in any other disease known to me. I have heard of one lady who, having failed to obtain relief at the hands of a large number of practitioners of various kinds, deliberately ended her misery by suicide as her last and only resource.

The disease is far more common in women near the climacteric period of life than either before or after it, and by far the most common cause is diabetes. The case of this kind which first attracted my attention was that of a lady from North Stafford, forty-nine years of age, who consulted me on the 9th April, 1873. She had suffered for three years from intense misery due to eczema of the whole of the genitals, extending down the thighs and up over the abdomen, nearly as far as the umbilicus. She was extremely stout, breathless, her face of a purplish red colour, and she was of an extremely querulous and desponding disposition. She could not sleep in bed, and her tortures on account of the incessant itching and burning were, she said, indescribable. She had ceased to menstruate at forty-eight. I certainly have rarely seen a worse case than this, and examination of the parts amply confirmed her description of her misery. She had had several children, and the vagina was of a large size, and a copious offensive discharge issued from it. The labia majora and labia minora were swollen and cedematous, and between them lay cakes of a reddish-grey colour, which, she told me, formed again almost as soon as they were removed. She had been under the care of a great many practitioners of medicine of various kinds, and had almost given up all hopes of relief in despair. Curious to know what these greyish cakes were composed of, I broke a small fragment of one in a drop of glycerine on a microscopic slide, and on examination, to my surprise found it to be composed almost exclusively of the *torula cerevisiæ*. This led me to the conclusion, of course, that her urine must be saccharine, and on drawing a little from the bladder I found it to be abundantly so. She was, in fact, suffering from advanced diabetes. I found the quantity of urine was not very great—that she never passed more than sixty-two ounces in twenty-four hours. I did not make any quantitative examination of the urine, and therefore cannot say how many grains of sugar she was passing in the twenty-four hours, but from the results of the ordinary chemical tests it must have been a very large quantity. The ordinary symptoms of diabetes, *i.e.* great thirst and ravenous appetite, were not present to any marked degree, and certainly the appearance of the patient was very far removed from what we see in the ordinary diabetes of the young. I arrived at the conclusion that the sufferings in this case were due to the fermentation of the sweet urine, and the consequent presence of *torula cerevisiæ*. The

fact was that as the woman was extremely stout and could not keep herself readily cleansed the results were that she had chronic vaginitis with chronic inflammation of the skin. This I regarded as due merely to the mechanical disturbance of the fermentative process. Remembering that brewers arrest fermentation by the use of hyposulphite of lime, I advised her to use very freely a lotion of hyposulphite of soda, an ounce to a quart. This she did with immense advantage. But it was only by very frequent ablutions and syringing that she obtained anything like comfort. The internal treatment consisted entirely of large doses of opium. She took a grain of opium three times a day, and three grains at bed time. In this way she obtained very great relief, not only from her local sufferings but from diminished secretion of sugar, for after having carried on this treatment till June hardly any sugar was to be found in the urine. I decreased the quantity of opium to half-grain doses, with two grains at bed time, and I had the satisfaction of finding that about September the patient was practically well, and was satisfied with one grain of opium at bed time. The only remaining trouble was the chronic vaginitis. For the cure of this I swabbed out the vagina two or three times with strong carbolic acid at intervals of a month, and the application of oleate of zinc completely cured her. I have seen this patient casually two or three times since, and have the satisfaction of knowing that so late as 1883 she was in perfect health, and had no resumption of her old trouble.

In November, 1875, a lady aged forty-five, from Leamington, was placed under my care. She had been married twelve years without having any children. She had been suffering for about two years from eczema of the vulva, and on examination I found a small piece of white cake as I had in the previous case. The conditions were practically the same. The urine was loaded with sugar, there was chronic vaginitis, and the eczema involved the mons veneris and the labia majora and minora. She had been treated chiefly with desiccating powders. I put her on the same treatment as in the previous case, with immediate relief of the symptoms. I saw her from time to time until 1881 when menstruation ceased. During the whole of that time she had been taking the opium, never having found it necessary, however, to take quite the full dose, and so long as she persisted in the use of the lotion of hyposulphite of soda she remained perfectly comfortable, but even forty-eight hours without it would put her in a condition of misery. During 1882 I saw her three times in April, July, and November, and found that the sugar in the urine was diminishing, so that in the beginning of 1883 it was practically gone, and the patient remained perfectly well.

Mrs. A., aged forty, resident in Birmingham, saw me for the

first time on the 10th April, 1877, for a condition pretty much as described in the two previous cases. I found the urine to contain large quantities of sugar. The opium treatment was at once begun, together with the lotion of hyposulphite of soda, and relief was speedily obtained. Her menstruation ceased abruptly in July, 1879, and in the beginning of 1880 the sugar had entirely disappeared from her urine, and she was practically well. I saw her in September, 1884, for another ailment, and found that there had been no resumption of the diabetic condition.

Mrs. N., aged forty-four, sent to me from Nottingham in the most pitiable condition from vulvar eczema. I saw her for the first time on 17th July, 1879. Her menstruation was regular and profuse, her urine was loaded with sugar, she was abnormally fat, and in the folds of the thighs the skin was almost raw. A purulent discharge seemed to exude from all parts affected with eczema. The hyposulphite of soda lotion seemed to have little or no effect in this case, and the doses of opium at bed time had to be increased to five grains to get complete relief. I tried a lotion of the perchloride of mercury, sulphurous acid, borax and carbolic acid, with the effect that they entirely failed to relieve, and in one or two instances made the patient much worse. I then tried a series of ointments, but I failed completely until I tried one made up of ten grains of sulphuret of potassium to the ounce, and this with the opium speedily relieved her and made her life moderately easy. One or at most two applications of the ointment in the twenty-four hours were enough to keep her free, unless during very hot weather, when she had to retire, wash herself with oatmeal and rain-water and reapply the ointment; but for nine months of the year she found that one ablution and one application were enough to keep her comfortable. She also used a soluble preparation containing the sulphite of calcium for application to the vagina, and from time to time she washed herself thoroughly out and washed the skin all over with a solution of the same sort. During the present year this patient's menstruation has become irregular, and I have no doubt she is now going through the climacteric; her urine is still however abundantly supplied with sugar, and her sufferings, if she neglects herself at all, are speedily resumed in all their former intensity.

On 17th February, 1880, I saw a lady from Stratford-on-Avon, aged forty-seven, with whom menstruation had ceased for about six months, and who for three years previously had suffered intense irritation from vulvar eczema. Her urine contained a large quantity of sugar. I advised her to use the ointment of sulphuret of potassium and half-grain doses of opium for the day and two grains at bed time. On the 2nd of April I saw this patient, to my amazement, perfectly well. The urine was quite free from sugar, and has remained so ever since.

E. R., from Oldbury, came under my care in May, 1883, being then at the age of forty-nine; six months previously her last menstruation took place, and very soon afterwards she became affected with characteristic vulvar eczema with its accompanying sufferings. On her first visit to me in May, 1883, I found a very large quantity of sugar in the urine, and she was put on the opium and hyposulphite of soda treatment. On 17th January, 1884, the sugar was still very abundant, and the treatment was continued with very considerable relief. In October, 1885, codeia was substituted for the opium, the lotion of hyposulphite of soda being continued. This substitution had no beneficial effect, in fact the patient was not relieved anything like so completely by the codeia as she was by the opium. On November 5th, the opium being resumed, a carbolic acid one per cent. lotion was substituted for the hyposulphite of soda, but this did not suit at all. On 7th January, 1886, in conjunction with the opium the ointment of hepar sulphuris was ordered, and on the 4th February the patient was found to be in a condition of wonderful comfort, though the urine was abundantly rich in sugar and had a specific gravity of 1042.

To these cases I could add a considerable number in my hospital out-patient department, where the record has not been so continuous or so accurately taken; but they all have the same conclusion, that you may completely relieve the vulvar eczema, which is due to the fermentation in diabetes of the saccharine urine, by some such material as will arrest the same process in the brewer's vat. For the convenience of the patients the ointments containing the substances necessary for this purpose are better than the lotions, for the action of the lotion is over within a very few minutes of its use, whilst the ointment will remain on the surface for many hours. In place of the ointment I have used various preparations of different sorts, such as desiccating powders, etc., but in no case have I ever got such satisfactory results as with the ointment of the old liver of sulphur and with the opium; I tried morphia and codeia and various preparations of the narcotics, but I got no such satisfactory results with anything as with the plain solid opium in the form of a pill. It has of course at first only a soothing influence, but there can be no doubt that as the case goes on the opium exercises a curative influence on the disease and prevents the secretion of sugar.

These experiences were called to my mind by a paper by M. Lecorché in the *Annales de Gynecologie* for 1885, and were subsequently published in the *Practitioner* for June, 1886, and since then I have had abundant opportunities of establishing the conclusion that a very large proportion of cases of vulvar eczema are due to this curious disease.

Monsieur Lecorché's paper is extremely interesting viewed from my point of practice, because together we seem to be able to tell a story about this climacteric diabetes which is tolerably complete. He sees the cases apparently as a physician to whom the special points are quite subsidiary questions, whereas I see the patients only by reason of their special ailment, and this I discover to be due to a diabetic condition of the urine. With diabetes as a disease I have little further concern than this, but I am able to substantiate Monsieur Lecorché's observations in very many particulars and somewhat to extend them. It is a very singular fact that I have only seen three of these cases of vulvar eczema due to glycosuria in women under the climacteric period, and Monsieur Lecorché tells us that of 114 cases he noticed the disease seventy times amongst women who had ceased to menstruate, and that he therefore concurs in the view, which has been often expressed, that the menstrual life appears to create for women a certain immunity with regard to this peculiar disease.

So far as I know I am able to extend the observations of Monsieur Lecorché clearly to the establishment of the fact that there seems to be a special form of glycosuria in women at the menstrual period which runs a certain definite course extending over some years and having a natural termination in recovery, and I find that this disease is singularly common amongst Jewish women. In fact few women belonging to that race seem to be entirely free from glycosuria at the climacteric period.

In many cases the substance in the urine does not seem to be true sugar, but something resembling it, for it often does not give at once and distinctly the results obtained in ordinary glycosuria by the cupro-potassic reduction test. Many curious vagaries in this respect I might mention, if I had the time and information necessary to make them interesting and intelligible. I am certain, however, that a very rich field for research is open in this direction to some enterprising young pathologist. Let me give an example. Dr. Laird-Cox, of Bishop's Castle, brought me a patient aged forty, with characteristic eczema. He told me that he suspected it to be a case due to diabetes, such as I had described, but he had found no sugar. I found he had used Fehling's solution by boiling the solution and adding to it immediately a small quantity of cold urine. I drew urine from the patient's bladder by a catheter, repeated this process and got no result. But, in Dr. Laird-Cox's presence, I added a small quantity of the cold test solution to a larger quantity of the cold urine, brought them gradually to the boiling point, and in a few minutes obtained an abundant proof of the presence of a sugary substance. The presence of sugar in such cases is also often intermittent, so that

it may be found one day and not the next. This disease does not seem to be curable by drugs; all the cases have given me the impression that the termination has been a natural one, and I can call to mind several cases in which I now have reason to believe the course of events in vulvar eczema was precisely that which I have narrated, and which I now can easily recognise. Yet in these cases no kind of remedy, opium never having been used, appeared to influence the course of the disease, and two of them I know have recovered without any kind of idea as to how their recoveries took place. I have enquired into both of these cases with care, and they seemed to be so remarkably like those of climacteric diabetes with vulvar eczema that I have no kind of doubt at all that they belonged to this group. Their recoveries took place in precisely the kind of way that I have encountered in the cases where I made the diagnosis exactly. I therefore conclude that this climacteric diabetes in women is a disease which, like other things at the same period of life, runs in them a course of considerable extension, and may get well without any kind of treatment. In all probability the opium which these patients took shortened the period of the disease, and I am inclined to believe this is true. It certainly was of immense service to them in diminishing their sufferings. Of diabetes, as a disease, I know so little that I am not prepared to say whether in the sense of its curability opium is a special feature in the treatment, but in all the cases that I have recognised, and which have given it a sufficiently long trial, recovery has taken place. Therefore I take a very favourable view of the disease now when I see a case in my practice, unless, of course, it should be in a young woman. There are at the present moment several of these under my care in my private clientèle and in my hospital practice, and I have confidently encouraged the patients in the continuation of the treatment with an assurance that in time they will be completely cured—a promise which of course may be qualified by further experience. There are many points about these cases which require the most careful investigation at the hands of those who are versed in the chemical knowledge which I do not possess, before my conclusions can be completely established; I must satisfy myself with relating them only in outline.

Monsieur Lecorché draws attention to the occurrence of eczema in diabetes appearing in other parts of the body besides the vulva, and therefore he is of opinion that the mere mechanical irritation of the decomposing urine is insufficient to account for all the troubles. This is likely enough to be true, for nothing is more likely than that in a condition of dyscrasia, such as exists in diabetes, eczema and other subsidiary affections should occur. With such cases I have no association, because patients never

come to me on account of eczema on any other parts of the body than the vulva, and therefore I see only those cases of diabetic eczema where the disease is limited to the vulva; and in every one of these there can be not the slightest doubt that the mechanical explanation of the disease was a satisfactory and complete one.

M. Lecorché again states that the amount of sugar in the urine is not always commensurate with the severity of the vulvar inflammation, and upon this point I can offer no opinion, because I have never engaged in any exact study of one of these cases, and can only give an idea of the amount of sugar in the urine by the rough chemical tests of Trommer and Fehling. But there can be no question that in the cases within my own experience the disease faded away in proportion as the sugar became less abundant in the urine.

Roughly speaking, the conclusions that I have arrived at concerning this affection are that in the great majority of cases of eczema of the vulva at the climacteric period, the disease is due to the presence of sugar in the urine. I have come across very few cases of this kind in which, having examined for sugar, I have not found it. The disease seems to begin at or near the arrest of the menstrual functions, and to extend over a period of several years, then terminating in all probability by nature's own process. The sufferings of the patient are very much diminished, and probably the duration of the disease is shortened, by the liberal administration of opium; whilst the local trouble is best mitigated by ointments containing such substances as will arrest the process of fermentative change in sugar. So far the best substance that I have found for the purpose is the old-fashioned *hepar sulphuris*. The women who suffer from diabetic eczema are nearly always very fat.

Besides the great group of cases just described there are others in some measure due to local causes, or to a general dyscrasy. Chronic endometritis and chronic vaginitis in old women often give appearances in the vulva closely resembling eczema, and a cure of the internal trouble soon dismisses that which gives them more trouble.

In one case in my practice, where the disease was probably the expression of some dyscrasy, such as chronic gout, it was completely cured by the insertion of a seton just above the groin; but when the seton was removed the disease returned. The patient greatly preferred the inconvenience of the seton to the misery of the eczema.

The disease known as *prurigo senilis* is one which seems to exist only on paper, as those cases answering its description which have fallen under my notice have always been explicable upon some better pathological basis than is supposed by this title.

Herpes.—The only form of herpetic eruption which I have seen on the genitals is the ordinary shingles or herpes zoster. More than once I have seen this disease course over the crest of the ilium, and end in a sort of inflorescence on the labium of the same side. Women seem to be more subject to herpes zoster than men are, and they are greatly troubled with the acute pain over the course of the nerve, which sometimes continues for weeks after the eruption has faded. The hypodermic injection of morphia relieves this pain at once, and in some instances permanently. The local application of liniments containing opium are also useful.

This disease is really an exanthem, and is accompanied by febrile symptoms, which are occasionally quite severe. Its local appearances are due to some condition of the nerve, leading to papillary inflammation of the skin, and the nerves affected are probably the parietic nerves of the blood vessels.

Acne.—Is a very common and an exceedingly troublesome disease of the external genitals; and as the inevitable itching causes the patient to scratch, it is often very difficult to say whether the case is one of mere lichen, of acne, or even of furunculus. Undoubted acne is generally met with in unhealthy women about the climacteric time of life, from whose vagina some chronic discharge has flown for years. The patients are generally otherwise out of health, suffering from gastric and hepatic disturbance, not unusually are given to over-indulgence in stimulants, and are inattentive to cleanliness. The spots are usually of small size, save on the very margin of the labia, where they generally appear as large boils of a very painful character. The eruption often extends upwards over the abdominal surface.

The cure is to be obtained by attention to the cause of the discharge, and to the employment of such remedies, hygienic as well as therapeutic, as will improve the general health. The best local application is Vleminx's solution—

Sulphuris	℥ i.
Calcis	℥ ii

boil in three gallons of water down to one and a half gallons and filter. Or Kemperfelt's lotion—

Sulphuris	gr. xii.
Camphoræ	gr. x.
Gum. acaciæ	gr. xx.

Contunde bene deinde adde gradatim

Aq. Calcis	℥ ii.
Aq. Rosæ	℥ ii.

To be applied with a feather at bedtime and rubbed gently off in the morning, no soap to be used the while.

I have also found the following old-fashioned Yorkshire domestic receipt very useful for these troublesome diseases—

1½ oz.	Virgin wax.
2 oz.	beef marrow.
1 oz.	spermaceti.
2 drhms.	balsam of tolu.
1 drhm.	alkanet root.

Mix these ingredients in an earthen vessel, let them dissolve gradually, and boil for a few minutes, then strain through muslin and stir in 1 oz. of oil of almonds.

Furunculus.—This eruption, besides being met with as a development of acne, occurs independently as large boils on the labia. The cause of these I have very often found to be the poisoning of the socket from which a hair has been pulled, by the acrid discharge. The hair on both the male and female genitals is a fertile source of mischief, hitherto but little suspected. I have seen a chancre result from the engraftment of the poison in a cut on the glans penis which had been caused by a hair. A very interesting case of this kind was communicated to me some years ago by a practitioner of great experience who had spent some years in the Colonies. He wrote to me as follows: “I remember a case of phagedænic chancre occurring in my practice, which certainly started in the wound caused by a hair. The man had connection with an Australian aboriginal, and he told me that on making entrance the woman’s hair was so long and wiry that it cut a nick in the sulcus of the glans. This cut I saw, and in it commenced the mischief which was ultimately so bad as to destroy the organ and threaten life.”

In a woman with a chronic purulent discharge, the hair on the labia gets matted together, some hairs get pulled out, and the wounds, being inoculated with the purulent discharge, become small infective abscesses. I have repeatedly cured recurrent furunculus by directing the hair on the genitals to be kept short; and I am quite satisfied that venereal diseases might be entirely stamped out by a more scrupulous attention to the toilette of the genitals.

Warts.—These growths are sometimes congenital, and in that case they partake more of the character of moles, being darkly pigmented and covered with soft hair. When acquired they do not appear before the age of puberty; and unless they are very few in number, and quite isolated, they may be always looked upon as indicative of either gross inattention to cleanliness, or of a venereal taint. This taint, however, need not be syphilitic, for

these growths are quite different from the gummatous tubercles which result from the purulent infection of syphilitic discharges. These warts often occur as a sequela to acute gonorrhœa, and seem to be caused by the discharge from the vagina in the chronic form of the disease. I believe such a condition in public women to be the source of gonorrhœa in the male of a peculiarly virulent character; so that warts on the genitals of prostitutes should always be regarded as specially demanding treatment. They are most effectually treated by a desiccating powder of calomel (one part) and powdered starch (ten parts).

Warts have been divided into the soft and hard varieties, but these differences are chiefly caused by the position of the wart causing it to be constantly or only occasionally exposed to the influence of moisture. They consist of a basis of connective tissue, with blood vessels and nerves, covered with thickened epithelium. They are merely hypertrophied papillæ, a fact which explains their frequent occurrence on young women, and their rarity in middle-aged and old women.

When neglected they have a tendency to divide at the summit and become feathery, to form painful fissures at their base, and to be the source of infective discharges, by which they seem to extend to contiguous parts. In this way their distribution often becomes symmetrical; and I have seen it so extensive that it was hardly possible to identify the structures they covered. They may therefore become a source of great misery to their owners. Their is no treatment of them so rapid, safe, and satisfactory as removal by scissors or cautery.

Gummatous or mucous tubercle.—This eruption goes by various names, such as condyloma, etc., and its nature and relations have been variously described. From my own observations, I conclude that the tubercles are essentially of the same nature as warts, with the exception that, being much more transitory, they have not the permanent basis of connective tissue which characterises the former. They are certainly due to purulent infection of a specific nature, and consist essentially in inflammatory hypertrophy of the papillæ. They are, therefore, not primary sores, but I am quite certain they may be the source of primary infection to the other sex. Thus a woman whose primary sore has been closed for months may go on infecting fresh victims from a recurrent crop of mucous tubercles. She will be found to have a chronic vaginal discharge, full of leucocytes, which mats the hair of the labia and is the immediate cause of the eruption. Connection takes place *

* The results of modern research tend to show that precisely defined exanthematic diseases, like syphilis, are due to the existence of minute organisms of various kinds and names, and though the establishment of this fact is a distinct advance in science, it has not revealed to us any more precisely the causes of these diseases, nor has it helped on the treatment of them. It has had, for the time, a most mischievous effect in leading rash and inconsiderate people to apply the fact in improper directions and produce a bacillary craze.

and the leucocytes from the tubercles of the woman infect the mucous surfaces of the man—a result which would have been obviated if the victim had been of cleanly habits. In fact, these mucous tubercles are rarely seen in women who are attentive to their persons; and very careful enquiry into cases where the history of the infection could be obtained has satisfied me that the great majority of men who suffer from syphilis are infected by these soft sores, whilst men, on the contrary, convey the disease from hard sores. In the experiments of those who have practised syphilisation it has been found that the contact of grease with the poison renders it completely inert. It follows, therefore, that the judicious application of a simple cerate to the genitals and careful cleansings would annihilate the possibility of syphilitic infection.

These mucous tubercles may be dry or moist, the difference depending greatly on their position and the stage they are in. They generally appear first on the inner surface of the labia majora, the discharge affecting some slight abrasion. The first result is the formation of a pustule, which soon becomes a small cup-shaped sore, the edges of which are raised. The whole is elevated above the surrounding surface by the invasion of the subjacent tissue by leucocytes, and these wander out at the surface in the form of a purulent discharge. If there is a mucous surface in contact, these leucocytes invade and infect that, and, carried elsewhere by the discharge, they rapidly infect, in a dirty woman, not only the vulva, but the anus, the folds of the groin, and, as I have seen in several cases, even the umbilicus. They are soft, and bleed easily on touch. Their surfaces are always covered with discharge, unless they are fading or in a position where they get dried. When cut into they are seen to consist in hypertrophy of the mucous layer by the invasion of leucocytes. They are very easily cured; for all that is needed is the diligent employment of an astringent vaginal injection, and the frequent application of a puff powder containing thirty per cent. of calomel. Under this treatment they will vanish in a week; but as long as the patient remains in the secondary stage of her constitutional disease they will return if she becomes careless, and if she be not subjected to a prolonged course of constitutional treatment. This treatment should, of course, consist of iodide of potassium or of mercury, according as the practitioner finds the disease best treated by one or other or both in his particular locality; for I have found that the features of syphilis vary in different localities, and that these variations necessitate differences in its treatment. I am also certain that an unclean woman with constitutional syphilis may at any time become a source of infection by growing a crop of mucous gummata.

Rupia.—The large scabs and subjacent ulcers of this secondary syphilitic affection are to be found occasionally on the labia, but only when it is also present elsewhere on the skin of the patients.

Xanthoma.—I have seen one case where the peculiar yellow patches of this dermal change were symmetrically distributed over the body. Both upper eyelids, the palms of both hands, the soles of both feet, large tracts on both sides of the chest and abdomen, and both labia majora were occupied by it. The whole of the rest of the skin was darkly pigmented. The patient suffered no pain and had no special symptoms, but she gradually lost her strength and died of marasmus. I had no opportunity of making a post-mortem examination. One other case, quite as well marked, recovered completely, the recovery occupying nearly ten years.

Nævus.—I have seen one or two cases of small nævi on the labia of infants. They require removal in order to satisfy the anxieties of the mothers, though they might very well be left alone. They are best removed by ligature or cautery.

Lupus.—This disease is occasionally met with both on the labia majora and the mons veneris. In hospital practice I have seen it only once, but in private practice it has come under my notice repeatedly. All the patients have been young women, none being older than thirty. It begins as a pimple, which is very slow in its progress, and which seems ultimately to exfoliate and to extrude from its crater-like opening a soft, yellow, putty-like material. A scab forms over it, and under the scab the disease seems to progress, sometimes in the direction of a curved or serpiginous line, but more frequently by general eccentric advancement. After a slow progress, usually extending over a year or two, the ulcers heal, and leave behind them depressed glistening scars. I have not found any treatment to be of much service in arresting it, and my experience of the application of escharotics, as advised by some dermatologists, has been especially unfavourable. The patient should be placed on tonic treatment, with cod-liver oil and arsenic, and removed to a warm climate if the disease proves inveterate. The disease undoubtedly belongs to that class of ailments due to some local infective process to which we give the name of tubercular. But it is only too clear that under this title a very inharmonious classification of diseases has been made, many of which have nothing in common besides the mystery which surrounds their pathology.

This disease is also remarkable for its tendency to break out at intervals after having got perfectly well; and no patient who has ever suffered from it can be assured against its recurrence. This peculiarity has induced some authorities to refer it to a

sypilitic origin, but in none of the cases which I have observed could I discover any reasonable basis for this belief.

I have never seen lupus produce those extensive destructions of tissues which are described by dermatologists when it attacks the face; and in all the cases where I have seen it on the genitals it has not been found elsewhere on the patient. I have also seen one case of what was undoubtedly lupus of the vagina. It presented a very peculiar appearance not easy to describe. The following is extracted from the hospital notes of the case. After a confinement seven years before she began to have sores inside the passage, and when the child was only four months old, her milk disappeared (it had never been very abundant), and during the period referred to her general health had become very bad, and she had got very thin. After a time she became pregnant again, and then her health improved and the sores healed, and this has occurred three times. She has been at various hospitals, but has not found treatment which has done her much good. When the sores are in existence she always gets very thin and out of health. On examination I found that little masses of tubercle existing in depressed glistening cicatrices of old ulceration of the mucous membrane. The serpiginous ulcers formed no such masses, and are mostly curious linear scores entering the mucous surface in an oblique direction, and leaving one side of the *score* like a flap under which the ulceration is going on. Three or four of these flaps were lying almost parallel to each other, forming thus a series of fringes. The edges of the ulceration were red and indurated, and the discharge was a thin watery pus. I put the patient on cod-liver oil and arsenic, and applied nitrate of silver locally. She improved in health, and then I suppose, because she became pregnant, she was lost sight of.

Inflammations and Ulcerations.—What I have to say concerning these affections of the labia may be taken to refer also to other parts of the genitals.

There can be no doubt that the genital mucous surface of women, like other mucous surfaces, suffers from simple catarrhal inflammation; and though in ninety-nine cases out of a hundred the practitioner may set down acute vulvitis of infective origin, in the hundredth he may commit a grave error by referring it to the usual source. It may often be noticed that women with chronic discharges have them increased when suffering from general catarrh, and I have seen cases where catarrhal vaginitis was so severe that, were it not for the improbabilities thrown in the way by surrounding circumstances, I should have regarded the disease as gonorrhœal. There is one condition, however, which I have never found in cases where the disease was probably of catarrhal origin, that being œdema of the vulva.

I do not mean to say that vaginitis from infection may not be seen without œdema, but I regard its presence as almost pathognomonic of infection. When of simple catarrhal origin there is not much pain, the chief distress being heat and itching of the parts, accompanied by a yellow discharge. When the labia majora are separated, the mucous surfaces are found injected and puffy, and the hymen, if it exist, of a purple hue, and the discharge purulent and tenacious, and not very abundant. This disease is most frequently seen in young girls who are virginal, and is at once cured by a weak astringent lotion of zinc or alum. If allowed to become chronic, as it often is, it gets very inveterate.

Vulvitis of undoubted origin by infection is a very different disease, though it must be borne in mind that there are cases between the two classes where no opinion as to the cause of the disease can be given. As a rule an opinion as to the cause of vaginitis should never be given, women often blaming their husbands unjustly. In gonorrhœal inflammation of the genitals, especially if it be a first attack, the pain and the scalding, especially during micturition, are remarkable; and the presence of œdema, with a profuse, purulent, and not glutinous discharge puts the case almost beyond a doubt. A *sudden* access of pain with discharge is also very suspicious. If the labia be separated, the mucous surfaces will be found swollen, of a yellowish-red colour, and bathed in pus. I may here express my conviction, which I find to be quite in harmony with the opinions of the most recent authorities on the subject, that while a man may contract a gonorrhœa of the most severe type from a woman who is not and never has been the subject of this specific disease, no woman ever contracts gonorrhœa save by connection with a man suffering from it. The most severe cases which have come under my care have been very young girls, who have been infected at their first connection; and several of these I have found to be victims of the brutal superstition that a man can get quit of his disease by conferring it on a virgin. For the relief of the acute stage no remedy is so good as the continuous application of hot fomentations of acetate of lead and opium, the same drugs being inserted into the vagina in the form of soluble pessaries. Sometimes the disease is so severe that the margins of the labia ulcerate, and in that case they should be kept asunder by strips of oiled lint. When the initial severity has passed off, the most useful applications are pessaries made of the oil of the *Theobroma Cacao*, containing tannin or acetate of lead. After that, the prolonged use of injections of a solution of four per cent. of permanganate of lime will establish the cure. The absolute necessity of complete recovery must be insisted on with every patient, not only in her own interests, but in the interests of those with whom she may come in contact. During the acute stage of

vaginitis, especially if of infective origin, vaginal injections should never be used on account of the likelihood of causing endometritis and even peri-oophoritis. (See inflammation of ovary and Fallopian tube.)

In the course of some of the exanthematic diseases acute inflammation is occasionally met with. I have seen it in scarlet fever, and especially in small-pox. I once saw, in consultation, a child of ten years of age suffer from acute vaginitis in the course of scarlet fever almost as badly as if she had had a severe gonorrhœa; and in small-pox it is not unusual to find the vaginal mucous surface inflamed and covered with pustules of the disease. In diphtheria the same surfaces are liable to the specific form of inflammation seen in the fauces, and the ash-coloured membrane may be stripped off from the vaginal walls as from the tonsils. But this diphtheric form of inflammation is never found on the vaginal mucous surface alone, so that it need not be discussed here at further length.

Noma is a disease almost entirely confined to the children of miserably housed and badly fed people. It is not at all a common disease, and its most frequent seat is the face, but sometimes it is met with on the external genitals of young girls. It occurs always in the course of, or as a sequela to some severe exanthem, such as measles, scarlet fever or typhoid. It begins as a small reddish yellow vesicle or pimple, which rapidly extends into the soft tissues by an indurated base. This soon becomes gangrenous, and the whole of the surrounding skin is occupied by an unhealthy œdema, and the constitutional symptoms are very severe. Very few of the children attacked by this disease recover. I have seen it only once on the genitals, and the patient died. The only treatment which can be entertained is the liberal administration of easily digested and nutritious food, and the local application of some disinfectant lotion, such as a solution of chlorate of potash.

Chronic inflammation of the vaginal and vulvar mucous surfaces is most frequently the result of an incomplete cure of the acute stage of the disease. It may be safely said that in unchaste women a chronic inflammation is almost as dangerous as the acute form. Sometimes, however, a chronic inflammation of the labia may be the result of mere inattention to cleanliness, and without any previous acute process. Whatever may be the history, the appearances and the treatment are the same. The inner surfaces of the labia are slightly swollen, the labia minora are red and somewhat tender, and if a speculum be carefully introduced into the vagina, the whole mucous surface will be found bathed in a copious, creamy, purulent discharge, and its usual smoothness disturbed by round elevated papillæ, which bleed easily when touched. The speculum should not be used, however, if it can be

avoided. This state of matters may have existed for years without having called for special attention. The history of several cases of vaginitis which have come under my care, in perfectly pure women, seems to have been that the increased indulgence immediately after marriage has induced the relapse of an old gonorrhœa in the husband, which has, of course, extended to his wife. Under the impression that her suffering was only part of her necessary experiences, the acute inflammation had been neglected, and it was only when continued sterility, or the more serious sufferings of chronic inflammation of the uterine appendages, induced the patient to seek relief, that the real state of matters was revealed. In the fortunate cases where the disease has not extended into the uterus it is easily remedied.

Brushing the whole surface over with a mixture of equal parts of glycerine and carbolic acid, followed by the use of some simple astringent pessary, as acetate of lead or sulphate of zinc, will speedily effect a cure. In many cases this kind of chronic inflammation is the cause of sterility; and if the generative mechanism has received no permanent injury, of the kinds to be afterwards referred to, the cure of the disease will remove the hindrance to impregnation. Those cases where the disease has passed within the uterus remain to be considered in another chapter.

There is a special form of chronic inflammation of the genital mucous surfaces in young girls which deserves close attention, not only from its untractable character, but from the disastrous mistakes to which it sometimes gives rise. This disease is generally classed under the strumous affections of childhood, though I really do not know why it should be so, for I have never been able to observe any close relationship between it and the ordinary indications of a strumous dyscrasy. There can be no doubt that it arises sometimes from the acute disease, which may be of catarrhal or of specific origin. I have never seen, so far as I can remember, a case of acute vulvo-vaginitis of catarrhal origin in a child; and I am thankful to say that I have seen very few of specific origin. These were of course due to the brutal conduct of such as do not deserve the name of men, but I believe offences of this kind to be much more rare in this country than is supposed; for I have repeatedly been called upon to make medico-legal examinations of children who asserted that men had assaulted them, but upon whom not the slightest evidence could be discovered in support of their statements. How they were able to give details such as I have heard, and which were absolutely incompatible with the facts, I do not know.

Upon this subject I venture to say to my professional brethren that no amount of care and caution should be spared. Within a few weeks of each other the following experiences occurred to me.

A child, aged about ten years, charged her own father with having repeatedly had connection with her, the charge being given through some women who were afterwards proved to be desirous of doing the man some mischief. The child gave her evidence with such precision before the magistrate that it seemed as if there could be no doubt about it. The doctor who examined the child, a man of considerable experience, had, however, great doubt as to the possibility of her story, and he asked the magistrate for an independent examination of the genitals by myself. Without knowing anything of the case I answered the question as to the possibility of connection having been made with the child by an absolute denial. The genitals were perfectly intact and undisturbed. The charge was dismissed.

I happened to be waiting in an Assize Court and was listening to a case where a man was charged with having committed a rape on a child. Two medical witnesses were called, one for the prosecution and the other for the defence. One swore there were all the evidences of defloration, the other that the child was untouched, and unfortunately, the judge was inclined to credit the former. He ordered an independent investigation which showed that the child had never been in any way injured.

I do not quote these cases to give my readers an impression that all such charges are trumped up, but to urge that the utmost caution should be used in investigating each case from its physical facts, and those only, and that it is always advisable in case of doubt to obtain the opinion of an expert.

As I write these pages the whole country is in a condition of excitement over the case of a girl, aged eleven, found drowned and decided, most unfortunately, by a practitioner of medicine, to have been previously outraged. Nothing could be more horrible than such a story, but it was absolutely untrue. The police, with great skill and patience, unravelled the story and found that this poor child was and had been for a long time a juvenile prostitute, who would receive ten or twelve boys in rotation, and that her drowning was purely accidental. The evidence was submitted to me and I saw there could be no doubt that the medical man had inadvertently made a terrible mistake, the great trouble about which was the difficulty of disclosing the dreadful alternative story concerning the poor child. The authorities again managed this cleverly, and save to themselves and to me (and of course to the doctor who really was the cause of all the excitement) the real story was never known.

The chronic vulvo-vaginitis of children usually has no history of an acute stage. It is generally discovered by the child evincing pain on micturition, being found manipulating the organs, or by stains on the linen. Then the terrible idea that the child has been tampered with seizes upon the minds of the parents, and it is one of

which they are not readily dispossessed. If closely watched, many of these children will be found to masturbate; but whether this habit is the cause or the consequence only of the disease, I am quite unable to say. In a few cases I think it is the cause.

When the child is examined, the seat of the inflammation will be found to be almost solely the labia, majora and minora, and the anterior surface of the hymen. The vagina is rarely involved. I believe that in a large number of cases it is due entirely to a want of cleanliness, to the collection of the natural secretion in the parts, and its subsequent decomposition. In a few it will be found to be due to the presence of ascarides in the rectum; and in one case I found it due to the presence of a piece of worsted-thread which seemed to have been gathered from the carpet. I have had a case of chronic discharge from the vulva of a girl six years of age, due to a collection of pins, thread and rubbish of various descriptions, which she asserted had been introduced by her companions, but which were undoubtedly put there by her own fingers. Sometimes, however, it does seem to depend on some constitutional condition, for it resists all treatment except removal to a more favourable climate. It is these cases, perhaps, which have earned for it the title of strumous. Usually it yields rapidly to a careful toilette and the use of an ointment containing iodide or acetate of lead. Unless there are distinct traces of injury no countenance should be given to the fears of the mother that her child has been meddled with. Under such circumstances that must be established by non-medical evidence.

From what I have previously said my readers may be sure that according to my own experience a real outrage upon a child is a very rare thing indeed. That indecent liberties are taken with children is, I am afraid, only too commonly the case, and that efforts may be made to outrage them I am sure there is evidence enough to convince anyone. But in all the numerous cases of children that have been brought to me, under the suspicion that something wrong had been done to them, I have not in a single instance been able to satisfy myself that it was really the fact, although in three or four of the cases there had been grave suspicions. The subject of such an outrage would be of course free from the usual evidences of violence which affect matured women, because the child could not struggle, but any effort to effect entrance into the delicate tissues of the genitals of a child would leave such injuries that no mistake could be made if the examination were made within a week or ten days of the attempt. The fourchette of a child is extremely delicate in its structure and easily torn, so that nothing like any effort at rape could be made without leaving effective evidence of its occurrence. The charge of such an offence is so horrible, and when made against an innocent man involves such absolute ruin to him, even when he is discharged without any

stain upon his character, that no kind of care can be too great to prevent such a catastrophe. On the other hand, no care would be enough to bring to condign and just punishment the brutes who engage in such practices. The step to be taken which is most satisfactory on both sides is that an examination should be made of the child by at least two competent practitioners, one of whom shall be an expert either in children's diseases or in diseases of women. The criminal law of England is unfortunately far too lax in all such cases in permitting either the discharge of guilty men, or the conviction of innocent men to be based upon the opinion of the nearest practitioner that may be picked up to make an investigation. It is just as reasonable to expect that a man who wears a diamond ring should be able to estimate the value of diamonds generally because he happens occasionally to look at his own jewel, as to expect a practitioner who inspects the vaginal orifice of a child or a woman probably once in fifteen or thirty months, to give satisfactory and indubitable testimony upon the question of deflorescence either in a child or a grown woman.

It is natural enough to any woman to suppose under suspicious circumstances that her child has been improperly behaved to, but the rule ought to be to do everything to assuage that fear, and not to excite suspicions in the other direction, as I have seen too often done in my experience in criminal investigations. For as there are women vile enough to sell their children for improper purposes so there are others of the same type who will seize upon any slight train of circumstances to make a plunder out of the possibility of a rape.

The primary specific ulcer from which follow the group of diseases which we class under the term constitutional syphilis, presents quite different appearances on the dry skin of the genitals from those possessed by it when it is seated on the mucous surface. Opportunities of seeing primary sores in women are not at all common, for when seated internally the women are often not conscious of their existence; and when external they are regarded as pimples, and are seldom brought under the notice of the surgeon.

A case came under my observation many years ago which convinced me that certain suspicions I had entertained concerning syphilis in women were correct, and its details are so interesting that I may give them at length. A gentleman sent his mistress to consult me concerning an obstinate little ulcer which had existed for some weeks amongst the hair of the mons veneris, close to its upper margin. I recognized it at once as a chancre for it had exactly the cup-shaped indolent appearance, with an indurated base and thin serous discharge, as characterizes the chancre on the male prepuce. She confessed to me that she had

suspected its character, and she gave a singular account of its origin, which need not be repeated here. Suffice it to say that it was not derived from her protector, who had never suffered from any venereal disease. It healed rapidly under the application of the nitrate of mercury ointment, and the internal administration of iodide of potassium. I heard no more of the couple for about three months, when the male came to me with an undoubted chancre, which he assured me he must have acquired from his mistress, as he had known no other woman for nearly three years. After the episode of her chancre, of which he did not know the character, he was absent from her for eight weeks, and at the first renewal of their intimacy they indulged in very great excess. The result was that in a few days she had a very numerous crop of mucous tubercles on the inner surface of the labia, and in three or four weeks he had a chancre. Mutual recriminations ensued, each asserting unfaithfulness on the part of the other. She came to me for the treatment of her sores, and assured me that no fresh contagion had been possible, and that her disease must have come from her protector. The most careful investigation of her genitals supported her statement. The old sore on the mons was firmly cicatrized, and nothing but the mucous patches on the labia existed. I have reason to believe that these two people gave me their fullest confidence, even though sexual histories are notoriously untrustworthy, and the facts of the case seemed to resolve themselves into this: The woman had acquired syphilis from an outside source, and at the time of the excess already spoken of was probably just in the stage for the outbreak of some secondary affection. The injury done to the labia by excessive intercourse determined the outbreak of mucous tubercles there, and the secretion of these, fastening on some abrasion on the penis of the man, produced a chancre. I see no possibility of any other explanation, and only such a view can explain the great disproportion which exists between the detection of primary sores in women, and the general frequency of the disease in both women and men. If we accept the possibility of the mucous tubercles becoming sources of infection, the number of women in which we find them readily afford an explanation of the number of men who are infected. When a primary sore exists on a woman, it is, of course a source of contagion. When seated on the mucous surface, it is generally found to be a deeply excavated ulcer, with sharply defined edges, somewhat undercut, and with distinct induration. The floor of its cavity is of a greyish-purple colour, and covered with a thin clear discharge. I have seen it most frequently in the neighbourhood of the clitoris, but it may be met with on any part of the mucous surface, including the lips of the cervix.

I have never seen anything which I suspected to be the initial

stage of a chancre on the mucous surface, so that I can give no description of its early history. When seen in the later stages, I have always found it to heal rapidly, and with much less care than a chancre on the skin requires. As far as I have been able to determine, it has a very short course, and rarely receives any treatment beyond what the surgeon himself gives it. I have been able to make a microscopical examination of a fragment of one of these mucous chancres, and found that it corresponded with Rindfleisch's description, in that it consisted of an infiltration of all the textures with round cells, and these seemed to me to be leucocytes.

Besides this undoubted primary ulceration, we sometimes see, especially on the inner margins of the labia majora, small, round, cup-shaped ulcerations, often very numerous, which are undoubtedly syphilitic, and are certainly secondary, that is, they follow a primary sore. Sometimes their bases feel somewhat indurated, a fact which makes me suspect that they may be secondary inoculations from the primary sore. They may, however, be more truly secondary, in that they appear after an interval from the healing of the primary sore. They are often the fore-runners of the true mucous tubercles. They are very apt to recur in crops, and I am quite certain they may infect the male with a primary sore. They should be treated by the application of nitrate of mercury ointment, and appropriate constitutional remedies. The best of these seems to me to be the biniodide of mercury.

The so-called *rodent ulcer* does not seem to differ much from epithelioma, save that it has not so great a tendency to affect neighbouring glands. I removed one indurated ulcer from the inside of the labium which had been in existence for nearly ten years, yet had grown only to the size of a florin, and I regarded it as a rodent ulcer because its elements were chiefly fibrous with a few caudate cells, and there was no appearance of epithelial proliferation or nesting, such as characterize the true epitheliomata. I do not know, however, of any clinical appearances which would justify a discrimination between the two diseases; and, as far as clinical results and treatment are concerned, they are much on an equality. Removal by the knife or ecraseur is always to be preferred to caustics; and no prophecies against the return of the disease can be made with safety.

Epithelioma is, unfortunately, a common disease of the female genitals, and may be found on any part of the cutaneous or mucous surface. According to the usual descriptions, it begins by the formation of one or more nodules about the size of pins' heads, with a shining surface, and a slightly reddish colour. Or it may begin in some already existing structure, such as a wart. These

nodules coalesce, and form an indurated and somewhat painful swelling, attached to the subjacent tissue. On a cutaneous surface the superficial epithelium becomes loose, but is not readily detached, unless by being picked or brushed off. It usually, for a time at least, adheres over the ulcer by the desiccation of the moisture which oozes out from below it, forming a scab. When this crust is removed, there does not seem to be much tendency for its reproduction, and the subjacent ulcer generally remains open. On a mucous surface the preliminary scab is not formed, the ulcer being the direct result of the abrasion of the epithelial surface. The margins of these ulcers are raised and indurated in a peculiar abrupt line, which once recognized is never likely to be forgotten. The edges of the ulcer have a tendency to overhang the crypt, and the raw surface may present varying appearances according to the treatment it has received; but under all circumstances it will be found to be indurated like the edges, though not to so marked an extent if the skin has been destroyed and the subjacent textures invaded. If carefully protected from interference and covered by mild dressing, it will present very much the look of a healthy wound, with bright red granulations, as if it were making an effort to heal. So much is this sometimes the case, that I have seen mistakes in diagnoses made by really experienced surgeons, who have sent away undoubted epitheliomata with the assurance that recovery would be speedy under the new treatment prescribed. If much interfered with, the surface looks dry and of a purplish colour, and bleeds on the slightest touch.

The progress of the disease on the external genitals is usually slow, until it has infected the inguinal or pelvic glands. I have met with it on the mons veneris, on the labia, and on the walls of the vagina. Its most common seat is the cervix, and the next most frequent is the neighbourhood of the clitoris.

If left alone, the ulceration gradually extends over the adjacent skin and mucous surface, lays bare the deeper structures, and by the hemorrhages and continuous discharge finally exhausts the patient. The end is usually brought about by an invasion of the neighbouring lymphatics, which take on an encephaloid growth.

The propriety of meddling with malignant growths, is, in my opinion, a question which requires a much more painstaking investigation than has yet been given to it. But I do not think that there can be any doubt of the advantage of removing epitheliomatous ulcers in an early stage when a margin of healthy tissue can be removed with them. When this is accomplished, the disease may never return, even when microscopical investigation shows, as far as it can, that the elements of the growth are truly cancerous. But no positive assurances that it will never return can be given, for in one case where I removed a small-sized and rather chronic epithelioma from the right labium, death took place

within a year from cancer of the pelvic glands. As a general conclusion I may say that I am getting less and less disposed to meddle with their growths.

The structure of these growths consists primarily of an increase of the epithelial elements of the skin, and to a much less extent of its fibrous stroma. The cells present here and there a peculiar nodular arrangement, to which the term "nesting" has been applied. I think that it is probable that these nests are endogenous centres of growth for the multiplied cells. The cells do not present the appearances of mature epithelium, and, as the growth progresses, their resemblance to epithelium becomes less and less, till at last, when examined in the most advanced stage of their growth, they present the characteristic want of resemblance to any kind of cell in particular, which is really the best description of any cancer cells. It seems also as if the clinical malignancy of the growth increases just in proportion as the elements lose their resemblance to mature epithelium. Syme used to teach us that what we could not cure was cancer, and what we could cure was not cancer, and we have got no further yet, either in pathology or treatment.

Epithelioma has been divided into the superficial and deep varieties; but, as far as I have been able to see, these are mere stages of the same process. If a case is very protracted, and we see it in the early stage, we may call it an example of superficial epithelioma. But if it is rapid in its growth, or if we see it only at a late stage, we may refer it to the deep-seated variety. It is quite certain that the superficial form always merges into the deep-seated if left alone.

On mucous surfaces epithelioma presents some very important differences from its appearances and history when it attacks skin. Thus, it does not scab; its apparent tendency to heal is never visible, and its course is much more rapid. The discharge from it is much more profuse, and the tendency to hemorrhage is much greater. It affects neighbouring glands much more rapidly, and is altogether a far more formidable disease. The only possible remedy for it is early and free removal, and the results of this are very doubtful.

Abcesses of the labia may be acute or chronic. When of the former kind, they are usually the result of blows or severe inflammation, as gonorrhœa. They give rise to severe constitutional disturbance and great pain, and they share with abcess of the face the peculiarity of having within them pus of a particularly fœtid odour. I do not know the cause of the fœtor, indeed I have not seen it mentioned by authorities; but I have never found the peculiar smell of the pus from abcess in the face or in the female genitals to be possessed by pus from any other source. These

acute abscesses should be opened as soon as fluctation is determined, and poultices applied till the inflammatory process abates.

The *chronic labial abscess* has been stated to arise generally from closure of the orifices of the mucous crypts or of the vulvo-vaginal glands. This may be so in many instances, but there is a peculiar form of chronic abscess of the body of the labium of a cystic character, which seems to have its origin in an obstructed vein. It is peculiarly apt to recur, and if not freely opened leaves a sinus, which never closes permanently until its lining membrane has been excised. These abscesses are very slow in their progress, and give a great deal of trouble and pain. They feel like filberts in the substance of the labium, and when opened emit a small quantity of glairy pus, which has not, like the acute abscess, any peculiarly offensive smell.

The vulvo-vaginal gland (Bartholini's gland) is apt to be the seat of an abscess in acute gonorrhœa, or from obstruction to the orifice of its ducts. It may also suffer from chronic inflammatory enlargement to such an extent as to render intercourse painful, in which case it ought to be removed.

Tumours.—In all cases of general œdema of the body in women, the vulva is one of the points where it is first displayed, and where it becomes a source of trouble. In chronic œdema of the labia, associated with general dropsy, it is often necessary to make punctures with a lancet in order to allow the serum to drain away.

It is safer to use a lancet than a needle, but the punctures must not be made large, and the patient ought to be made aware of the risk of sloughing which always accompanies the operation. The relief afforded by it, however, is generally so great as to compensate fully for the risk. Œdema of the vulva, accompanying acute inflammation, has already been referred to.

Simple hypertrophy of the labia sometimes is such a source of annoyance and hindrance to sexual intercourse as to require operative interference. It is often seen in young women who toy with their genitals, and also in women who have born large families. In hot weather the hypertrophied organs get chafed, so that the outer surfaces and the opponent surfaces of the thighs become raw and sore, requiring the constant use of starch puff-powder.

The labia minora are sometimes so enlarged, congenitally, as to constitute a deformity. I have several times removed these in young girls to cure masturbation just as circumcision is required for the same reason in the male child.

Simple sclerosis of the labia is probably only the early stage of two forms of disease of which I shall speak immediately—

elephantiasis and syphilitic hypertrophy. I have had under my care a patient in whom I have watched a sclerosis of the left labium for nearly four years, but it remains exactly where it was when she first came under my notice. The tissues are not hypertrophied, and the labium is not fixed, but through its greater part it is as hard as cartilage. The history is vague, but the condition seems to have been in progress about eighteen years.

Of elephantiasis I have seen only one case, which was sent to me by my friend, Dr. Campbell, of Stourbridge. In that case the labia were symmetrically and enormously hypertrophied, and had to be removed by the *ecraseur* to allow the woman to be delivered. The growths were quite soft and were nodulated all over, and were composed simply of an overgrowth of the elements of the skin and subcutaneous tissue, especially of the fatty nodules and its fibrous trabeculae. The wounds healed rapidly, and now, after four years, it has shown no tendency to recur.

I have recently removed an enormous adenoma of the left labium sent to me by Dr. Donovan, of Erdington. The tumour looked at first like a huge inguinal hernia: and it was only by most careful dissection of the pedicle that we became quite sure it had no intestinal contents. The parts were extremely vascular and the operation was a very serious one.

The tertiary syphilitic growth of the genitals, to which I have already made casual reference, is a disease which seems to be not very well known, and I have not, as yet, seen any detailed description of it. It will be most convenient if I give, first of all, the details of a case which was for several years under my care in hospital practice, and of which I have a very perfect history.

Mrs. M., aged thirty-five when she came under my care in 1871, had contracted syphilis from her husband five years before. The only secondary symptoms from which she had suffered were a slight sore throat, lasting for three or four weeks, and a few crops of papular eruption. Previous to her infection she had had seven children, and two years after it she had another, quite healthy. Soon after the birth of this child she noticed a few hard lumps growing upon the labia. They were quite painless and gave her very little discomfort. They steadily increased until the whole vulva became involved and intercourse was impossible. She applied to many institutions, and was always told that her disease was cancerous, and that a cure was impossible. When I first saw her, the condition was terrible. She could only stand or lie, she could not sit. Mid-way between the pubis and the umbilicus, and from that point over the folds of the groins for seven or eight centimetres down the thighs, over the whole vulva, perineum and round over the greater part of both buttocks, the skin was greatly thickened, quite hard, and occupied by large irregular tuberculated

nodules. The whole was absolutely fixed on the subjacent textures. These nodules amounted to large tumours over the mons veneris and labia, and on the nates they were traversed by five or six fistulous tracks, from which feculent pus constantly flowed. It was quite impossible to discover exactly where the anus was, and the finger could not be inserted in the vagina. The poor woman's life was perfectly wretched.

Having previously seen some growths of much less magnitude, but of quite the same character, which were undoubtedly syphilitic, and which disappeared entirely under specific treatment, I gave this poor woman the hope that a cure was possible. I placed her upon fifteen grain doses of iodide of potassium three times a day, with a carbolie acid lotion to relieve the horrible factor. This was persevered in for some months without the slightest improvement. She was then treated by Donovan's solution, which consists of the proto-ioduret of mercury and arsenic, and before she had taken it two months a marvellous improvement was effected; so that in March, 1872, the growths had diminished fully one-third in size, and she was able to walk about and sit down, the greatest improvement having been effected in the nates, and all the fistulae but one having healed completely. In July, the last fistula had closed, and motions of an ordinary kind were passed, though ocular examination alone did not reveal the situation of the anus. In this month her treatment was changed to the bichloride of mercury, of which she took one-sixth of a grain thrice daily perseveringly for the next twelve months.

On October 1st the labia were so reduced in size that the finger could be passed into the vagina, when it was ascertained that the canal was quite healthy, as was also the uterus. In January, 1873, all the induration had disappeared save from the skin round the anus, the rest of the textures having become perfectly normal in every respect. In October she discontinued the treatment, and was then five months pregnant. In February, 1874, she was confined of an enormous child, which had to be eviscerated, partly on account of its size and partly on account of a pelvic deformity of the mother. She unfortunately died of metria fourteen or fifteen days after confinement. At the post-mortem examination a small patch of induration in the neighbourhood of the perinæum was removed. Microscopic examination showed that it was composed chiefly of elongated caudate cells, imperfectly transformed into fibres, with loculi here and there, in which free cells with large nuclei were lodged. The hypertrophy seemed to be confined to the papillary layer of the skin.

This case has in its history absolute proof that the remarkable growths were syphilomata. Their position and their history, as well as the less satisfactory results of post-mortem examination,

lead me to believe that such a disease is only a chronic form of the mucous tubercle. Before the occurrence of this case I had seen others, and since then I have had further experience of this singular disease, and in every instance a cure has been effected by mercury, whilst iodide of potassium has utterly failed to affect it in any way. Were this the appropriate place I might adduce at length evidence which has been some time accumulating in my experience, that syphilis presents very different clinical features, and that we also have very different therapeutical results in different localities. Thus, in a large number of cases of syphilis, probably amounting now to many hundreds, which I have seen in Birmingham, I have only three or four times seen rupiform eruptions, and in all of these cases the disease was contracted elsewhere, in seaports. With us, the immediate or secondary symptoms are rarely so severe as I saw them in Edinburgh, whilst the number of syphilomatous indurations, in the tongue and vulva, are most remarkable. In these latter, the only remedy which need be given is mercury, iodide of potassium being useless. Now, in my earlier experience, in Edinburgh and elsewhere, the secondary symptoms were noticed to be usually very severe, and bad tertiary or gummatous growths were to me quite unknown by actual experience; and iodide of potassium was the favourite remedy, mercury being regarded with disfavour. The subject of the variations of disease according to locality is one of great importance, and worthy of being far more carefully investigated than it has yet been.

Hæmatoma and thrombus of the labia are conditions which are chiefly associated with pregnancy, but they may be met with as the result of violence to women who are not pregnant. I have been consulted by a husband in great alarm on the morning after his wedding, to find that his awkwardness had caused a large effusion of blood into the subcutaneous tissues of his wife's labia. A more terrible set of cases are those which come before us occasionally as medical jurists, where a number of men have consecutively had violent intercourse with one woman; or, worse still, where a man has struck or kicked a woman on the genitals, either because she would not admit his advances, or after he had accomplished his purpose. Some of these horrible cases have ended fatally by hemorrhage. The most usual cause of thrombus is pregnancy, a condition which induces hyperæmia of all the pelvic organs and of the lower limbs.

It is well known that one of the signs of pregnancy is a purplish colouration of the vulva and vagina, due to an enlargement of the venous radicles. During the later months of pregnancy, especially in women who have borne a large number of children, the veins become very much distended, and any unusual strain will cause their rupture, and the effusion of blood into the

surrounding tissue. I have known this to occur by only slight straining, such as lifting a pail of water. It may also occur *in coitu*, and is especially common in labour. During the severe expulsive efforts which occur towards the end of the second stage of labour, these veins often give way and cause thrombi, which are sometimes so large as to interfere with the progress of the labour. If this should be the case, the labium must be laid open, and the clot turned out, but under no other circumstances should it be interfered with. In some unfortunate cases these collections of blood break down after a few days, and become foetid abscesses, accompanied by extensive sloughing, and followed by death. When the possibility of this has been suspected, a free incision should be made to evacuate the débris, as being the step most likely to obviate the last and most unfortunate process.

Another and still more sad kind of vaginal thrombus is that which I have seen produced once or twice by the abuse of instruments in unskilled hands. I shall never forget being called to a case at a distance where the practitioner had made a most unjustifiably protracted attempt to deliver a woman by means of the forceps, during which he told me that they had slipped at least twenty times. I found the vulva a mass of cuts and bruises, so that its textures were hardly recognisable, and the whole of them were infiltrated with blood clot. The whole of the soft parts sloughed in a few days and the patient died.

The enlargement of the veins of the labia seen in women who have borne children is sometimes so great as to constitute a permanent and serious inconvenience. Such varicocèles are also seen in women who have never borne children, and in a few rare cases seem to have been congenital. Some three years ago, I was consulted by a young woman who had been married for five or six years, and in whom coition was impossible on account of enormous varicocèles of both labia, which had been in existence all her life, but had greatly increased since puberty. In fact, her hymen still remained intact. Two attempts had been made to remove them by the knife, but the hemorrhage was so terrible that the operations were not completed. As she was determined to run any risk for their removal I undertook it, after warning her that it would probably be fatal. I introduced a stout needle through the bases of each labium, and passed a strong india-rubber ligature above it, completely strangling each mass. In a week the ligatures had cut their way through the tissues without any bad result, the only trouble being the great pain caused by the ligatures, which required the constant administration of opium. She is now quite well and has a living child. The enlargements were found to consist of large venous sinuses with very thick walls. I have since had two cases of similar tumours, unilateral, and have removed them both successfully by the elastic ligature.

Small cystic tumours of the labia are very common, and are usually of three varieties, the most common of which has simple glairy contents, and probably arises from the closure of the orifice of one of the numerous mucous glands. These are usually placed very superficially under the mucous surface, and are to be treated by simple evacuation. The second and less common variety is situated in the body of the labium, is of larger size, and its contents may be thick and tenacious, but clear or partly purulent, or even sebaceous. To prevent a fistula remaining after the opening of this cyst it is always better to dissect it out entirely. The third and least common of the three kinds is that which has sanguineous contents, and is probably the result of the closure of the loop of a vein by the inflammatory adhesion of its inner coat. These can be always cured by simple evacuation which, in my experience, is quite without risk.

The extrusion of some of the abdominal contents into the labia as a hernia is common enough to have come under the notice of most experienced gynaecologists. The passage takes place through an unobliterated foetal structure, Nuck's canal, and may consist either of omentum, intestine, or the ovary. The rarity with which this canal remains open explains, I believe, the comparative frequency of femoral hernia in women. But probably in one out of every thirty or forty cases of inguinal hernia in women the protrusion will be found to pass into the labium, and disastrous cases are on record where the sacs have been cut into under the groin under the belief that they were cysts. Cases are also on record where the ovaries, and even the pregnant uterus, have been found in this unusual position. The diagnosis of these protrusions is not difficult if care be taken to investigate the conditions of the tissues between the swelling and the abdominal wall; for in the case of a hernia, a neck will be discovered leading up to the inguinal opening, which will diminish any doubt as to the nature of the case. If the protrusion can be completely returned, a radical cure may be effected by such operations as are advised by Wood or Wutzer. I have twice removed cystic ovarian tumours which have presented themselves as hernial protrusions in this way.

Lipomatous growths, either encysted or the result of hypertrophy of the locular fat of the labium, are also met with here; and if interference with them be necessary they may be removed by an ordinary cutting operation. *

Simpson has met with small true neuromata beneath the mucous membrane of the vulva, similar to the neuromata found elsewhere, but nothing of the kind has yet come under my notice. He recommends their removal. He does not describe them fully, but I presume that they correspond to the painful subcutaneous

* I have seen a case where the labia are enormously enlarged by fatty hypertrophy, the patient being estimated to weigh nearly four hundred weight.

tumour of Wood. The most common form of malignant growth on the vulva is the epitheliomatous, but I have also seen the labium the seat of an encephaloid tumour, a hopeless condition, of course.

Malformations.—Children are sometimes brought to us with congenital malformations, which make it a matter of difficulty to determine which sex they belong to; and there are others who are referred to one sex or the other by their parents without the direction of a skilled opinion. In these latter cases awkward mistakes are sometimes made which have to be rectified in later life. There are many historic cases of males having been married as women, and of women who have been placed in the positions of men. I know of one male, belonging to a wealthy family, who was christened as a girl, and still, at an advanced age, is regarded as belonging to the other sex and dresses accordingly. These cases of malformations are always very distressing to the parents, and they become afterwards a great trouble to the patients

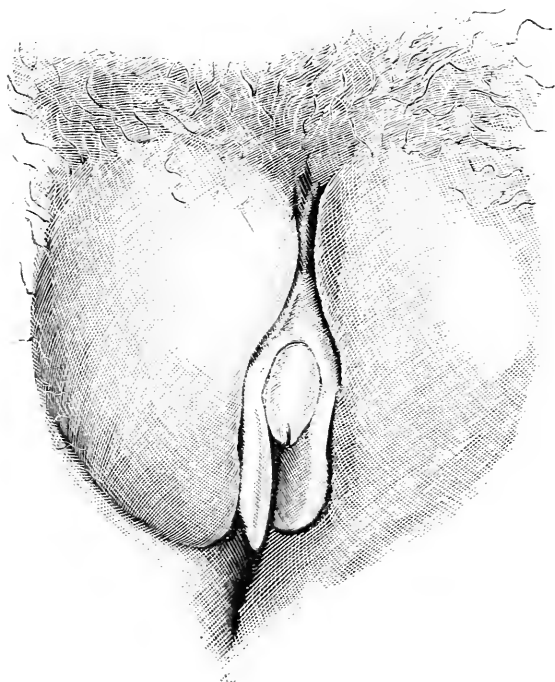


FIG. 3.—Hypospadiac male after puberty who had been brought up as a girl.—(*Annals of Gynaecology.*)

themselves. They may be divided into two classes for clinical purposes—those in which an arrest of development in the male organs give them an appearance as if the child belonged to female sex, and those in which an excessive development makes the female organs resemble those of a male.

The first of these two classes is by far the most common of the two; and in all cases of difficulty it is a good rule to assume that it is a male child unless the contrary can be shown, for in this way lamentable mistakes may be avoided. By the time a male arrives at the time of marriage, he will have learnt, from the education which all men go through soon after puberty, whether or not he has a marital capacity; and if he finds he has not, he will not attempt to enter married life. But the majority of women enter the married state with but a very hazy notion of what its functions are, a misfortune to which a large proportion of their special diseases may be attributed. If a malformed male, therefore, should be brought up as a woman, he may enter, and in very many instances actually has entered the state of marriage, utterly unaware of his misfortune.



FIG. 4.—Hypospadiac male after puberty who had been brought up as a girl.—(*Annals of Gynaecology*.)

The vestibule of the human female is homologous with the membranous and partly with the prostatic portions of the male urethra, and in some few instances the male uro-genital canal becomes so modified in form as to be undistinguishable from that of the female. The points of entrance of the Wolffian and Cowperian ducts into the uro-genital sinus of the male, and of the Mullerian and Bartholinian ducts in the female indicate the corresponding segment of the canal in the two. In women the uro-genital canal (vestibule) measures only an inch in depth, whilst the vagina is four to six inches. In many mammals, however, the uro-genital canal is proportionately much longer than in the human female, and presents an approach to the tubular form in the male of the same animal. In the cow and giraffe it is much elongated and in the lemurs it is one-third of the length of the vagina, whilst in the platyrrhine monkeys its length quite equals that of the vagina. In the higher or catarrhine monkeys the uro-genital canal is always shorter than the vagina, indicating an approach to human proportions.

Cases of extroversion of the bladder, a deformity which occurs much more frequently in male than in female children, have been set down as one of the forms of spurious hermaphroditism which renders the determination of the sex difficult. But in those cases where it really does so, the arrest of development is so great as to render any question of marriage impossible. So also we may dismiss the cases where the penis has become adherent to the scrotum, or otherwise covered by integument; for such cases will reveal themselves at puberty, and no greater misfortune than an error of nomenclature will have been experienced.

The real difficulties occur in those cases in which the deformity is due to an arrest of development causing incomplete closure of the genital raphe. These malformations are in fact a reversion of type to those classes of animals in which there is a cloaca, or common outlet for the genito-urinary apparatus and the intestinal canal. The two folds which are developed from the walls of the cloaca early in the life of the human embryo unite more or less imperfectly, and the results vary according to the degrees of imperfection. Thus if the first pair of folds do not unite, the cloacal arrangement of the bird is retained; whilst if the second folds remain separate anteriorly from the pelvic portion, the separate arrangement of the urinary and genital canals seen in females, where the vulva only forms the common canal, is established. The sexual differences, as far as the external genitals are concerned, date from this point: the organs of the male, by which the genito-urinary track is continued through a common tube from the pelvis, being formed by a further union of the anterior folds. Other changes of course take place in the surfaces of the Wolffian bodies, where the same structures are developed

into ovaries or testicles as the case may be. If, then, we have testicles formed in the abdomen, whilst the anterior cloacal folds do not unite further than their pelvic portion, we have a product which is the kind of spurious hermaphroditism now under consideration. When a case of this kind presents itself, its most striking feature is a median cleft with two lateral eminences, which looks exactly like the orifice of a vagina bounded up by its two labia. At the anterior commissure is a stunted penis, which may be mistaken for a hypertrophied clitoris. But if the structures be examined carefully, there will be no difficulty in determining that this fissure is merely the open urethra, the supposed clitoris being grooved in the same way that the glans of the penis is in hypospadias, and the mucous membrane of the unclosed urethra is distinctly marked on the under surface of the stunted penis, the orifice of the lacuna being a persistent and perfectly trustworthy evidence of the sex of the patient. If there is a second canal, the sex of the patient is beyond doubt; and this is also the case if testicles can be found in the cleft scrotum, the halves of which represent the labia. In a case I saw lately in Wales the presence of the second (genital) canal behind that which was clearly urinary, clearly enough indicated the sex. But on one side was attached a clitoris which had a ludicrous resemblance to a minute penis, and this had led the majority of those who had seen the child to pronounce it to be a male. Some years ago I called upon, in conjunction with my friend, Mr. Langley Browne, to pronounce an opinion on the sex of two children sent over from Turkey for that purpose. They were aged nineteen months and nine years respectively, and had both been baptized and brought up as girls. Without doubt, however, they are both males, and the elder had already given evidence of coming functional activity. These children have since clearly indicated their true sex.

But in many of these cases the testicles either do not descend at all, or do so only incompletely, and they must therefore be searched for carefully in the inguinal canal. If they are not to be discovered, then, having found the urinary orifice, a separate genital canal must be looked for, and unless it can be demonstrated, the suspicion must be entertained that the child is a male. But it must be borne in mind that there is a peculiar union of the labia minora (cellular atresia, to be afterwards described), which may completely hide the genital orifice. I have been very often called in to give an opinion on the sex of children where this cellular atresia of the nymphæ constituted the whole difficulty. Where this condition exists, there is always a space behind the urinary orifice which is suggestive of its existence, and a touch of the probe will decide it at once, without the possibility of doing mischief. If after this no genital orifice can be discovered, let the

patient be considered as a male, for if brought up amongst males but little harm can come to him. If, however, an individual were brought up amongst girls who turned out to be a semi-competent male, no end of mischief might accrue, as is amply proved in the case of Madelaine Mugnoz, the nun of Ubeda, who suffered death for rape.

I was consulted in the case of a prisoner in the ——— Prison, who was confined on the male side, and who for thirty-seven years had passed as a male: but I detected a small but quite distinct genital canal behind the urinary orifice, which was decisive of the person being a woman. I obtained a photograph of her naked; and the outlines of the figure, having the wide pelvis, narrow chest, and inturned thighs, quite confirmed my opinion. No appearance of menstruation had ever been noticed, and she had never entertained any partiality for either sex—facts probably due to an infantile condition of the internal organs as marked as that of the external. The facts were fully placed before her, but she begged of us never to reveal her secret, and she served out her time as a male convict. She was of a strong and robust frame, so that no harm was done.

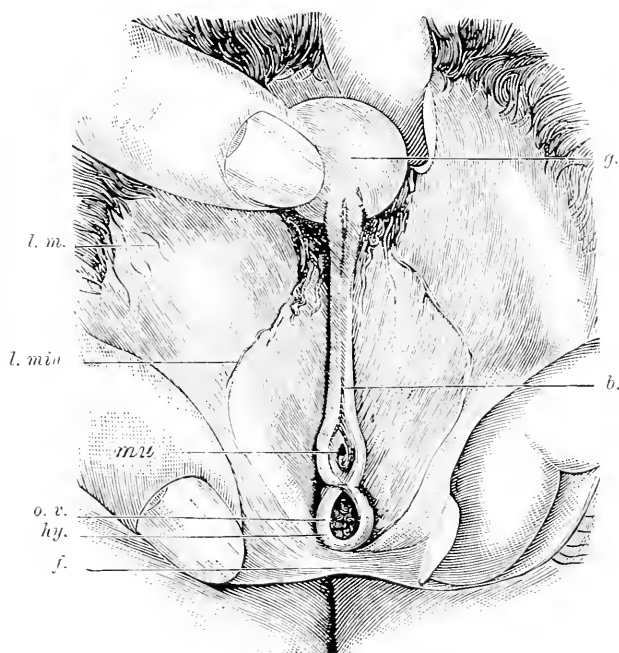


FIG. 5.—Genital organs of a hypospadiac man.

g. Glans. *l. m.* Labia majora. *l. min.* Labia minora. *m. u.* Meatus urinarius. *c. v.* Vulvar orifice. *hy.* Hymen. *f.* Fourchette. *b.* Frenum.

This drawing is from a man who had always lived and had been clothed as a woman, 27 years old. When standing, the organs resembled the male, as the testicles, with (on the right side) some peritoneal fluid, descended into the labia, or divided scrotum. When lying down the testicles were retracted, and the organs resembled those of a woman. The penis was two inches long, the pepuce divided, and the glans held down in erection by a frenum, shown in the plate.

This person had sexual desire toward the female sex, and had frequently attempted and performed an imperfect copulation, with ejaculation. The semen contained no spermatozoa. There had never been any menstruation, or molimina.—(*Pozzi.*)

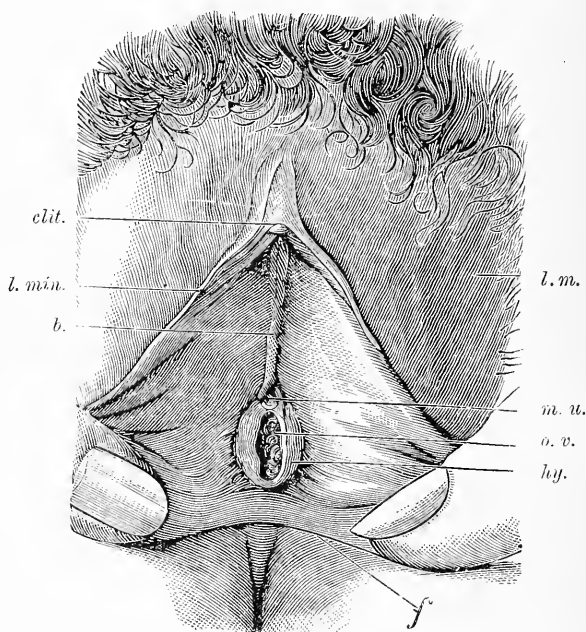


FIG. 6.—Genital organs of a girl having no vagina, uterus, or ovaries.

This drawing is from a young woman, aged 19 years, admitted to the Lourcine with gonorrhœa and syphilis. Although she had a perfect hymen, there was no vagina, and, as far as rectal examination would show, there were no ovaries. She had never menstruated, nor shown any periodical molimina, although at the age of twelve the breasts developed, and the body passed through the changes usual at the time of puberty. She also later acquired the habit of masturbation.

Deformities of the external genitals of female children are much less complicated, and *much* more rare, and are far less likely

to lead to mistakes than those already described. Only two varieties of malformation have been described as of importance, that in which the clitoris is abnormally enlarged, and that in which the cervix uteri is elongated and protruded.

I have now in my possession a preparation of a newly-born child in which the cervix is protruded from the vulva nearly a centimetre; but I can hardly imagine such a protrusion being mistaken for a penis, save by a very careless and hasty observer. Even the case of Marguerite Malann, described in the *Philosophical Transactions of London* for 1686, where the cervix is stated to have been seven inches long, we can only accept the mistake as being due to the credulity of the observers.*

Abnormal development of the clitoris has come under my notice several times, and in a young infant it certainly has a startling resemblance to the small organ of a male child on superficial examination; but the separation of the labia at once reveals the orifice of the genital canal behind that of the urethra. If cellular adhesion of the nymphæ should co-exist with enlargement of the clitoris, a combination not impossible but hitherto unrecorded, unless we accept the anomalous case recorded by Arnaud in his "*Dissertation sur les Hermaphrodites*" (p. 265) as an instance, a mistake would be possible, but all doubt certainly would be moved at the first occurrence of menstruation, as it was in Arnaud's case. Even with this combination, however, a scratch with the surgeon's knife would at once remove all possibility of error.

Acquired malformations are exclusively the result of injuries or of cicatricial contraction from ulceration or sloughing. Cases of this kind must be very rare, for I have met with only one instance of serious deformity of this kind; and the general principles of treatment do not differ from those demanded by congenital deformities.

LABIA MINORA. OR NYMPHÆ.

These structures share with the labia majora many of the conditions already described, and these need not be again referred to. But there are, in addition, certain states of malformation, and certain results of injury and disease by which they are affected, without the labia majora being involved.

The first of these is the very interesting and singularly little known malformation to which I have already referred under the name of cellular atresia. This term is not a very happy one, for it does not give any clear notion of the condition. It was first

* From the *Transactions of the Royal Society*, vol. III., p. 356. I translate the following:—"The member penis is well formed, except that it has no prepuce, and that there is no appearance of testicles. The menstrual blood also flows from its orifice. After having consulted Messieurs, the vicar-general, we made him dress himself as a man!"

used by Bokai, from whom Steiner has taken a description (*Compendium der Kinderkrankheiten, 1874*); and these two authorities are, so far as I know, the only ones who make any reference to this interesting malformation. Yet it cannot be very uncommon for I have seen at least twenty cases in hospital and private practice. All these were infants, as might be expected, with one exception; for a mother's anxiety always detects any malformation of the genitals very early in life. In the exceptional case the girl was between eleven and twelve years of age, but with the addition that the union was much more firm than in the infants, the conditions were identical in all. When the labia majora are separated in such a case, it seems as if the skin of the one passed over on to the other, forming a continuation of the perinæum, obliterating the vestibulum vaginae, as in the guinea pig. Only a small aperture appears at the anterior commissure, corresponding with the urinary orifice; but if careful search be made with a probe immediately behind this, an aperture will be found leading into the vagina, and a sharp tear with the probe will destroy the adhesion and put the structures in their normal relations. There can be little doubt, I think, that this form of atresia is a malformation by hypererchesis, a partial union of the anterior cloacal folds for the continuation forwards of the genital and urinary tracks in a common canal, as in the male; whilst the internal developement has resolved upon ovaries instead of testicles. If a case should be found where this closure had advanced so far as to produce rudimentary urethra on the under surface of an enlarged clitoris, we should have an exact reversion of type to the condition of the female organs of the *Loris gracilis*, a small nocturnal lemur which inhabits Ceylon, and which curiously enough has no tail.

Both Bokai and Steiner speak of having seen cases where the atresia was incomplete, that is, I presume, where it had not extended forwards close to the meatus urinarius. I have never seen any in which it was not complete.

The union in the human nymphæ is, of course, cellular, as all other adhesions are; but I think that this interesting malformation is deserving of a more distinctive title, and the most appropriate which I can manufacture is "Congenital Cheilosyncheleis."

At a woman's first intercourse, the hymen and nymphæ are both usually ruptured, and if the male organ be of disproportionate size, the injury is sometimes very serious. Every gynaecologist must have listened to the histories given by suffering women of the miseries they underwent during the first six or eight months of their married lives, miseries which are greatly due to the absurd social custom of the honeymoon. The rupture of the nymphæ does not always occur, for the injury may be limited to the fossa navicularis; but I have seen it as a set of radiating fissures all

over the vestibule. In these cases the hemorrhage is sometimes alarming, and as intercourse is repeated at very frequent intervals during the first few months of married life, the fissures are not allowed to heal, and they result in painful cracks which ultimately render intercourse so painful as to oblige the woman sometimes to refuse altogether to submit to it, and in nearly all cases she does not derive from it for many months that gratification which is one of its legitimate objects. This suffering may be wholly avoided, or at least greatly diminished and curtailed, by the inunction of the vulva with a simple cerate prior to congress; and I have repeatedly by such simple means been enabled to put an end to sufferings which were so serious as to threaten to break up a household. If the fissures are very deep and irregular they must be divided, just as similar fissures are divided in the anus, and intercourse must be suspended till they are healed. It would be a great blessing to women about to be married if their mothers would give them a little advice based on their own experience; but there is a false modesty ingrained in our English life which has to be paid for in much suffering amongst women. The injuries sometimes inflicted in the marriage bed are very serious. Mr. Hammond Smith, of Stourbridge, sent to me, some years ago, a young woman with a large recto-vaginal fistula which was the result of her husband's ignorant violence on the wedding night.

By-and-bye, when speaking of menstruation and the troubles incident to it, I shall have abundant occasion to speak on this subject, but here let me say that in my opinion a mother who allows her daughter to enter the married state without something like a notion of what she has to go through is guilty of a very serious breach of her duty.

Fissures at the fossa navicularis are often left from the tear of the perinæum, which occurs at almost all first labours, and these are sometimes so painful as utterly to prevent intercourse. They are, besides, a constant source of discomfort in walking, and when the patient passes water. Sometimes even after the tear has completely healed, the scar remains so tender for months that coitus is impossible. If there is a fissure it had better be divided, and the whole surface touched with solid nitrate of silver, the parts being kept absolutely at rest for a few weeks. If it is only a tender spot, the use of a little cerate before intercourse will obviate all pain.

The nymphæ are also subject to a peculiar and atrophic change, which occurs generally at or after the climacteric period. It is a very distressing complaint, and one of the most intractable with which we ever have to deal. It is very often, but by no means always, associated with vascular caruncle of the urethra, of which I shall speak further on. This affection has been alluded to by Simpson and various other authors, but no description which I have seen

includes all the facts that may be observed in connection with it. It is always confined, in my experience, to the mucous membrane on the inner surface of the nymphæ, and is never met with on the labia majora or in the vagina higher than the vestibule. It is the very frequent cause of the total suspension of marital intercourse, and is the real disease existing in a vast majority of cases of so-called vaginismus, a term which is widely used as a cloak to cover ignorance and carelessness. A patient suffering from this disease will nearly always be found to be over forty years of age, and she will state that she has a slight yellow discharge, a good deal of scalding when she passes water, and that she suffers excruciating agony on any attempt at intercourse. This latter is always the first symptom in date; and when a case comes under the notice of the gynaecologist, it will generally be found that intercourse has been discontinued for many months, if not for several years. The misery is very great, and a great deal of the climacteric drunkenness, too common amongst women, is due to this disease. If an examination be made in the early stage of the disease when the labia are separated and an inspection made, one or two spots of redness on the mucous surface of the vestibule will be observed, varying in colour from a palish-brick red to a bright purple; and if these be touched they will be found to be exquisitely tender. If very carefully observed in a chronic case, these spots will be found to be very slightly below the level normal mucous membrane. If a case be watched for a long time, it will be found that the spots are transitory and spreading; that after lasting some months, the red colouring either entirely disappears from the spot observed, and comes out at another, or extends serpigiously, disappearing from the old site as it progresses towards the new. This process is very slow, but it explains the intractable nature of the disease, which is seldom content until it has passed over the whole mucous surface of the nymphæ. During its progress the vestibule of the vagina slowly contracts, until, as in the case of a widow lady now under my care, it may be so reduced as barely to admit a finger, even though the patient has borne several children. In her case the disease has been going on for nearly six years.

In one instance I was enabled to remove a fragment of mucous membrane containing a patch of this vascular change, and I found enough to display the pathology of this mysterious disease. I placed the fresh fragment in my freezing leptotome, and having stained the sections by hæmatoxylin, silver lactate, gold perchloride and carmine, I found that at the site of the spot all the textures had been removed save a few fibres, the walls of the capillaries; and the superficial epithelium, under which the loops of capillaries with thinned and dilated walls lay almost unprotected, and all traces of gland structure had disappeared. The gold staining also showed nerve fibres, which lay amongst the capillaries

almost as unprotected. These observations explain the three chief clinical facts of the disease, the great pain, the abnormal vascularity of the spots and their tendency to bleed when touched, and the contraction of the surface in the third stage. It is, in fact, a progressive atrophy of the mucous membrane, the last textures affected being the blood vessels and nerves; for when the process has been completed the pain ceases, the redness disappears, and nothing remains but a vestibulum vaginae so narrow that incredulity may be excused when the patient states that she has borne children. I have recently seen a most exceptional case of this disease in a girl aged seventeen.

I have been fortunate enough in several cases, one of which furnished the specimen described, to watch the complete course of the disease, almost from its commencement to its perfect recovery, and I have seen all the stages described. This experience is rare, because the patients suffer so much, and they see so little prospect of cure, that they generally wander about from one gynaecologist to another, until the degenerative process works its own cure, as it always does. Great relief is obtained, though only temporary, by the application of strong carbolic acid to the red spots. The acid is a powerful local anæsthetic, and it never fails to mitigate the tenderness for a time. The application of a plug of cotton wool, soaked in a saturated solution of neutral acetate of lead in glycerine, placed between the nymphæ at bed-time, is also generally successful in procuring some relief. The new fashionable remedy, cocaine, seemed to me at first to offer a brilliant prospect of relief for these wretched cases, but a brief experience of it completely dispelled the illusion. For some ten or twelve applications it affords marvellous relief, but after that it increases the sufferings. Destruction of the mucous covering of the vestibule by the cautery is an heroic, but a very effectual remedy. The patient should always be informed that the progress of her disease will extend over years, that it will certainly get well in time, but that treatment from time to time will give her relief. She seldom retains this belief for any length of time, for it is the misfortune of gynaecologists that the diseases they treat are generally so chronic in the courses they run that the patients wander about and rarely give any one practitioner a very prolonged trial.

Under the name of "Kraurosis vulvæ," Professor Breisky, of Prague (*Centralblatt für Gynäkologie*, June 6th, 1885), confirmed my original observations (1875) as follows:—"He has observed twelve cases of which the following were the characteristics:—Apparent deficiency of the nymphæ, the integument from the mons veneris to the meatus urinarius passing smoothly over the clitoris without folds. Sometimes a cicatricial line is seen in the middle line of the vestibule. The glans clitoridis is either quite concealed by the shrunken teguments, or lies underneath a small

round depression in them. On separating the labia majora, the mucous membrane below the urethra is stretched, and projects as a transverse fold. An effect of the atrophic process is a '*stenosis vestibularis*,' together with which the tissues become unyielding, and readily tear. In consequence, after labour, extensive lacerations are often seen, and even by coitus much fissuring may be produced. At the places of greatest atrophy the integument is whitish and dry, sometimes covered with a thick somewhat rough epidermis, while the neighbouring parts are shining and dry and of a pale greyish red. The sebaceous glands of the pudendal folds generally appear remarkably few. Breisky has made a microscopical examination in one case, and found a cicatricial-like appearance; the connective tissue being sclerosed, nearly homogenous, the fibres running in a few nearly parallel bands, instead of having the usual undulating appearance. The papillæ were of unequal sizes, mostly small, the rete Malpighii strikingly thin. No sebaceous glands could be seen, and only remnants of sweat glands. As to the ætiology of the disease, the author can only say that in four cases much pruritus proceeded it; only three patients suffered from gonorrhæa; syphilis was not demonstrable in any; none had suffered from eczema or any other exanthem; nor could difficult labours, parturient injuries, or puerperal inflammation be pointed to as ætiological factors. Sugar was not present in the urine of any. Therefore the author has given it the name of '*kraurosis*' ('schrumpfung'—shrinking) '*vulvæ*.' As to its course and termination nothing is known. Treatment as yet has proved ineffectual."

THE HYMEN.

Atresia of the hymen, or imperforate hymen, is, I believe, always congenital, and is produced by an agglutination of the edges of the two papillary eminences which Dohrn describes as forming the hymen at about the nineteenth week of embryonic life. The fact that the hymen is developed so late is alone quite enough to disprove Simpson's view that atresia of the hymen represents the closure of the male perinæum. The structures engaged are wholly different, and the malformation now under consideration is strictly analogous to the closure of the vagina, which exists in certain rodents, the atresia being temporarily undone at the period of rut, or of parturition, and closing again immediately after. The closing of the male perinæum, I have already said, has its true representative in congenital cheilosynclisis. Atresia of the hymen is not very common, and is discovered generally some months after puberty by the formation of a tumour, and the general symptoms of retention of the menstrual fluid. Sometimes, however, it is detected much earlier by the

mother, and a young child is brought for treatment. This should consist of a crucial incision, followed by the insertion of an ebonite plug, to prevent reunion of the cut surfaces. In those cases where the malformation has existed until it has become the cause of the detention of the menstrual fluid, the hymen should be incised very freely, so as to allow a free exit to the thick treacly fluid, and the cavity should be frequently washed out with a five per cent. solution of carbolic acid used warm.

The hymen may be abnormally tough so as to prevent the completion of marriage. In such a case it must be incised, and a cerate should be employed to facilitate congress. Cases are brought occasionally to the specialist where women have been married for months or even years, and in whom the hymen has never been ruptured. I have seen one case where this was the case seven years after marriage, and where it was due (*incredibile dictu*) to the total sexual ignorance of the husband. Such instances of incompleteness of the marital act are most frequently to be explained by the nervous terror of the patient, and her refusal to submit to the act of marital congress. Sometimes they are due to incapacity on the part of the husband.

When ruptured by coitus painful fissures frequently result, as in the nymphæ, and may require the same treatment. But a more frequent result of its rupture is the formation of painful tubercles, the *carunculæ myrtiformes*, which consist of the flaps of the hymen, somewhat shortened. Their surfaces remain raw, and at each renewed attempt at intercourse they bleed, and give rise to great pain. The use of an astringent lotion, the application of nitrate of silver, or even the complete removal of the tubercles by the scissors, may be required. In all such cases the application of a simple cerate to the vulva should be made before intercourse is attempted.

The so-called strumous inflammation of the hymen I have already referred to under the head of vulvitis.

Pregnancy may occur without rupture of the hymen, so that great care must always be exercised in expressing any opinion as to a case of defloration. The presence of a tense hymen, and the absence of any tearing of the nymphæ or of the commissure, would be regarded as positive proof that complete connection has not taken place. When the finger can be passed into the vagina past a lax hymen, the indication is negative; but when there is any indication of radiating fissures of the nymphæ, the hymen or commissure, there is ground for suspicion that intercourse has been attempted. The hymen may be congenitally absent, or it may have been destroyed by strumous vaginitis in childhood, facts to be borne in mind in medico-legal investigations. The law as to rape is in a very unsatisfactory condition, and might be very easily amended, so as to be of greater force in protecting women,

and, what is equally required, of some use in protecting men. I have had a large experience in criminal investigations concerning this matter, and I become more and more satisfied that alteration of the law is required.

When a full-grown healthy woman makes a charge of a completely effected assault against one man, the charge ought to be presumed to be false, unless the woman was first stupified by drugs. I am perfectly satisfied that no man can effect a felonious purpose on a woman in possession of her senses without her consent. Assault her he may, but effect entrance he cannot, and according to the law this alone constitutes the major offence. But it goes without saying that the assault ineffectual might, and probably would, in the same woman, under a protracted struggle, have more serious effects than the completed offence; so that women are in this way insufficiently protected. On the other hand, a woman may, after a slight resistance, consent to intercourse, and then make a charge of rape for some extrinsic reason, such as to extort money or to protect her character if the intercourse is discovered. A charge of a complete rape against one man should, therefore, be to the prejudice of the woman rather than otherwise. If she tells the story of protracted and successful resistance and shows marks of injury the man ought to be visited, if found to be guilty, as heavily as if he had effected his purpose.

Again, if the evidence is against two or more men being engaged in the offence, no difference in its degree should be made on their conviction, and penalties of the utmost severity should be inflicted. So also in offences against children, where, it seems to me, no penalty could be too severe on a satisfactory conviction.

The law of England is especially faulty in these cases, and it is equally so in all other criminal offences, in permitting the evidence of one medical witness to procure conviction. I have had to do with several cases where the result of this was positively outrageous. The notorious case at Brimington, near Chesterfield, is one in point. A perfectly innocent man was sentenced to the severest penalty possible because an ignorant (or prejudiced) practitioner swore that a woman's drawers showed evidence of being torn in a struggle, when as a matter of fact they were worn out. No rebutting evidence was called, and it was only by months of agitation that we were able to free an innocent man, a man in whose favour all the evidence was, except the verdict of the one medical witness. I have a profound respect for my professional brethren and an absolute reverence for the art I practice, but power such as this is too great to be in the hands of any one fallible human being.

Clitoris.—The size of this organ varies very much, for in some women it is represented only by a depression in the anterior

commissure, whilst in a few it is found to be really erectile, and representing in miniature the appearance of the penis. There can be no doubt that it is chiefly in this organ that the peripheral nervous apparatus is situated, by which the sexual erythism is produced, and it is not unusual to find patients complaining, even in comparatively early life, of loss of power in this direction. In these cases, atrophy of the organ may be observed, and its consequent inaction may be the subject of a request for treatment. But as these cases have too often a moral complication they present great difficulties, and unfortunately they are seldom amenable to the advice that they should be resigned to their condition. The question of the sexual appetite of a woman, its preservation and destruction, have been amplified into most disgusting proportions by the writings of Dr. John Williams, and the occurrence of a trial in Liverpool last year, concerning the operation of removal of the uterine appendages for various diseases, of which I shall have afterwards to speak. At this trial several witnesses, Dr. Grimsdale, of Liverpool, together with Dr. John Wallace and Dr. Bennett of the same city, gave evidence of a kind which startled the medical world, and exercised the lay public to a very unwholesome extent—evidence wholly unjustifiable and lamentable in every way, to the effect that the sexual appetite of women was destroyed by removal of the uterine appendages. In the proper place I shall show that this is not so, and even if it were, the husband who would deny his wife relief from the sufferings and risks of a pyosalpinx or a bleeding myoma because she would no longer respond to his lust, could only be regarded as an inhuman brute.

As a matter of fact women are not sexual animals at all, as a rule, and when they are aggressive no kind of surgical operation seems to alter them. It has been my lot in a few instances to hear complaints from husbands of too ardent affection on the part of their wives, but the most accentuated instance of this kind I ever met with was in the case of a lady who certainly had led a very chaste life till the age of thirty seven. I removed from her an enormous uterine myoma, taking away both ovaries and tubes, and at least five-sixths of the uterus. She married at the age of forty-three, and now (at fifty) she seems to suffer from an advanced form of satyriasis.

We may fairly conclude, therefore, that the sexual appetite is not situated in the ovaries of women, just as it certainly is not situated in the testicles of men. Nor is it in the clitoris. It is chiefly mental and the sexual organs are only contributory to its indulgence.

Hypertrophy of the clitoris is, so far as I know, congenital, though, of course, it is liable to increment at the period of puberty. I have seen it so large as to resemble an infantile penis, and to be

capable, according to the statement of the patient, of distinct erection during sexual excitement ; but I think that the stories we read of women having this organ so large as to be capable of having, and desirous of connection with other women, must be records of cases, which I have already referred to, as men registered by mistake as women.

In the *Medical Times and Gazette for 1860*, there is a most singular instance of congenital enlargement of the clitoris recorded by Dr. J. N. Bainbridge, with an illustration which I here reproduce. I believe such malformations must be extremely rare as it is the only well authenticated case of the kind I have found any record of. The following is a brief history of the case :—

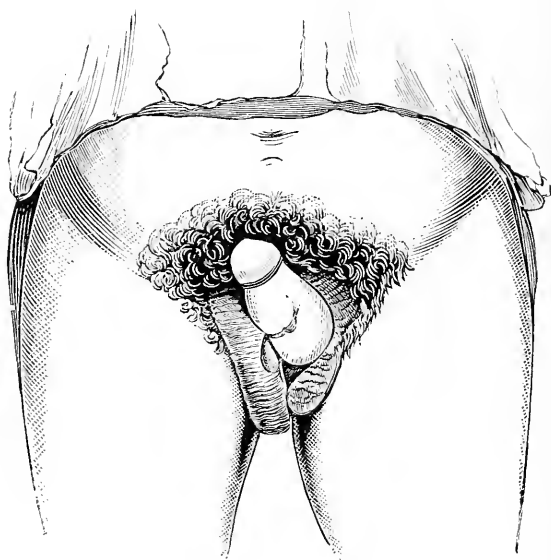


FIG. 7

“ L. B., aged thirty-two, was confined of her first child at the full period, December 1st, at the St. Martin’s-in-the-fields Infirmary. Upon examination per vaginam, the hand came in contact at the vulva with a large body obstructing the passage ; it was about five inches in length, and of the diameter of a quiescent penis of an adult. The labour progressed, however, without hindrance, the enlarged clitoris being reflected over the pubes, as the head emerged. The woman informs me that the enlargement was congenital, and that her mother attributes its presence to her having been fiercely attacked by a turkey cock when she was three months advanced in pregnancy !

"When I examined the woman, the clitoris measured three inches from the free to the attached extremity, and two inches in circumference at its thickest part.

"The free extremity represented a glans penis from the presence of a fossa in the position of the corona glandis. The surface was slightly nodulated; its erectile nature was marked by alternately increased and diminished size upon exposure to the air and *vice versâ*. Micturition was peculiar, the stream being directed forward, a peculiarity attributable, it appears to me, to the urethra being drawn forwards by the erectile body, immediately behind and beneath which the orifice is situated."

No reference to this organ would be complete without a discussion of the practice of masturbation, of which it is the chief seat. This painful subject is usually involved in such mystery, and spoken of so seldom and so incompletely by medical authorities, that it is by no means easy to determine to what extent it prevails, how to discriminate its victims, or how to suggest a remedy. When discovered in a school or in a family it strikes everybody with such horror that it is at once concealed and hushed up, instead of being treated, as it ought to be, as a disease; and the unfortunate children who are discovered in the practice are regarded by their discoverers as having sunk to the lowest moral depths. It is a sad misfortune that all sexual questions are so completely hidden from children at puberty that they are driven to make discoveries for themselves, often with disastrous results. One of the greatest practical results of the discovery of Mr. Darwin of the descent of man from the animals which have gone before him is that by it the sexual instincts, or as they are generally and most unfortunately termed, the sexual passions, are shown to be the most necessary as well as the most prevalent of all the instincts which have been evolved by the necessities of animal existence. We might just as well reasonably speak of the respiratory passion or the circulatory passion. Respiration and the circulation of the blood are essential to animal existence. As the best breathing, and those with the best blood circulation necessarily have, under certain circumstances, the best chances of survival in the struggle, so do those with the best capacity for procreation serve their purpose in the struggle for the maintenance of the race, of the species, of the great chain of life itself. All the most pronounced organs adapted for struggles are directed towards sexual success. The sexual instinct has thus become everywhere in the scheme of creation the great weapon of evolution. That it should be curbed, properly restrained, and judiciously directed is now one of the great objects of civilisation—an object to be aided in every good and wholesome way. But I doubt very much if some of the methods employed for this purpose are judicious. The female organism has always been merely the vehicle for the maturation of the ovum, and for the receptacle of

the fertilizing influence of the male ; being, in fact, what we may call the passive factor in the reproductive act. For her part of the process, then, only enough of sexual passion or instinct is required to indicate to the male the stage at which his share may be effectually performed. For the male, on the contrary, a constant tendency to aggression is necessary that he may be in readiness at the time required.

Further, the struggle for the survival of the fittest has constantly been carried out in its chiefest severity amongst the males of animals, and only partially among the females ; so that it has come to be that the physically fittest has necessarily been also the sexually most powerful. This requires no proof, for it is demonstrated by the enormous prices given by breeders of all animals for the best males as compared with the prices obtained for the best females. In fact, through countless generations of all animals the sexual instinct, above all others, has been developed in the males by the constant elimination of the least fit, and the subsequent success of the sexually fittest. Every provision of weapon, offensive or defensive, in animals, from the spur of the cock to the tooth of the tiger, has its primary object in enabling its possessor to compete successfully in the sexual struggle. Even in civilised life the chief desire to possess wealth seems to be to make a good marriage, and the comliest daughters of our race walk off with the most successful (that is the wealthiest) suitors much as the tigress walks off with the victorious male. It ought to be, therefore, no matter of surprise that in the human race the sexual instinct is very powerful in man and comparatively weak in women.

Another matter must here be also noticed. The females of all animals resist the advances of immature males for the reason that the struggle of the fittest has taught the races that the offspring of such advances are less fit for survival than the offspring of the mature males. Anyone who has kept poultry must have noticed how soon cockerels make advances to hens, and how persistently the latter refuse them, and how they punish the cockerels for the attempts until their perfect maturity has been attained. Considering these two great facts in animal life it is not surprising that masturbation is very common amongst boys, and comparatively rare amongst girls. Indeed if we are to believe some authors, and I must say I am inclined to do so, boys always discover the practice for themselves, and very few of them are free from it. I am quite certain, on the other hand, that it is relatively rare amongst girls, and that generally it is the result of direct contamination. Sometimes, however, they discover it ; for I have met with two instances of children, almost infants, one being only four years of age and the other six, where it was absolutely impossible that it could have been communicated to them, and in

both of whom it was found to be utterly impossible to check it. They were both of defective intellect, a condition which I regarded as the cause of the masturbation, rather than, as might be more generally held, that the vice was the cause of the deficiency. I look upon it, in fact, as a reversion of moral type, for no one can have watched the habits of monkeys without having discovered that masturbation is almost universal amongst them in confinement. Whether it may be practised by them in their native woods is not yet known, but I fancy that it is rather the result of their luxurious living, their freedom from the strain of earning an honest livelihood in the native circumstances of their wild life. Idleness and luxury are always promotive of lust in monkeys as in men.

Between the period of puberty and the time when young members of the human race may legitimately follow out their instinctive tendencies, there is a number of years during which the male glands are active and troublesome, and the males discover a method of relief. No such relief is wanted for the female glands, for they discharge their products without it. But if the rudimentary instinct be once directed into this artificial channel, it is often carried to great excess, and there can be no doubt that much mischief is sometimes done to the economy. The most pernicious effects are met with when the contamination reaches a congregation of young women, as in a girl's school. I have been consulted concerning epidemics of this kind both in boys' and girls' schools, and have always found that the chief difficulty to be that of persuading those having charge of the schools that the practice was to be regarded as a physical delinquency rather than as a moral evil; and that the best remedy was not to tell the poor children that they were damming their souls, but to tell them that they might seriously hurt their bodies, and to explain to them the nature and purport of the functions they were abusing. In one instance, the head of a very large girl's school took my advice on this subject with the best results.

The evil effects of masturbation have been greatly over-rated, thanks to a reticence on the part of those who know all about it, and this has permitted a disagreeable subject to fall into the hands of those who live by trading on the ignorance and misfortunes of their fellow-beings. In the case of men, it may and often does result in serious mischief, especially to those of weakly constitution. In women, I believe, it is not often carried to such an extreme as to do any harm, though I have met with cases where serious injury has resulted; and I am quite certain that girls may almost always be induced to give the practice up when a reasonable explanation is afforded to them of the risks attached to it. I have had under my care a lady who was educated in a convent in

Belgium, where, according to her statement, the practice was prevalent, and where she was initiated into it at fourteen years of age. She voluntarily informed me that she has continued it ever since, though she has married and borne several children. She is now nearly forty years of age and enjoys robust health. But there is another class of case well illustrated by two patients whom I watched for some years. They are both slightly built and rather delicate blondes. They were both corrupted at school early in life. In one of them an immoderate indulgence at a menstrual period brought on a hæmatocele, which has ever since been a source of ill-health, and has rendered her married life infertile. In the other, a similar excess, soon after marriage, induced a miscarriage; a repetition of her indulgence excited a hæmatocele and perimetritis; and to the same cause, I am sorry to say, we are obliged to contribute recurrent inflammatory attacks, which render her a chronic invalid. In neither of these cases has advice been of the slightest use, even though couched in terms of the strongest kind; but I am bound to say that such a disappointing result is very unusual.

The method of practising the vice is usually by the finger, but devices of a still more mischievous character have come under my notice. In young children, masturbation is often associated with defective mental development, and it should always be a ground for placing them under special care. In all establishments where the young of either sex are congregated, the system of separate cubicles should be employed; and children ought never to be allowed, under any circumstances whatever, to sleep with servants. In every instance where I have found a number of children to be affected the contagion has been traced to a servant. I think it possible that in some inveterate cases clitoridectomy might be beneficial, but I have never tried it, save in one instance. It is certainly the case, as I have said on previous pages, that the chief point of local excitement in the sexual act is in the clitoris, and a recognition of this fact involves a very strange and most discreditable piece of surgical history.

Some thirty years ago there lived and flourished in London a surgeon of great ability, Mr. Baker Brown, whose influence in the history of ovariectomy will be displayed in its appropriate place. Mr. Baker Brown was not a very accurate observer, nor a logical reasoner. He found that a number of semi-demented epileptics were habitual masturbators and that the masturbation was, in women, chiefly effected by excitement of the mucous membrane on and around the clitoris. Jumping over two grave omissions in the syllogism and putting the cart before horse, he arrived at the conclusion that removal of the clitoris would stop the pernicious habit and therefore cure the epilepsy. He operated in an enormous number of cases, for epilepsy is very common, and patients and their

guardians will submit to almost anything which promises a hope of relief. There can be no doubt that many cases were temporarily benefited, just as cases of epilepsy are benefited for a while by castration (in the males), removal of the uterine appendages (in women), and trephining (in both sexes). Besides Mr. Baker Brown's operations had no mortality, and the reduction of the sexual distemper of a number of epileptics, even for a while, or to some extent, was of itself a benefit. But Mr. Brown carried his efforts to a most injudicious extent, due to the fact that he was suffering from very extensive cerebral softening, and really was incapable of forming a sound judgement. His subsequent illness and death completely proved this, and I have a large amount of documentary evidence in my possession, which some day will see the light, which will place the terrible story of this most unfortunate man in a light altogether different from that in which it has hitherto been regarded. As a result of the disease from which he suffered he resisted the advice of his colleagues and the committee of his hospital, and he ran his hobby till he got into trouble with the Commissioners of Lunacy for a technical infringement of the conditions under which lunatics may be detained in places not licensed for their reception. This would have been of little consequence had he not been a successful ovariologist and had he not been pursued by a rival as relentless as he was cruel and persevering.

The authorities of the Obstetrical Society were induced to take the matter up, and Mr. Baker Brown was expelled from the Society, a large part of the evidence against him being furnished from the common-place book of this rival who seems to have dogged his steps for years.

Calmly regarded now after the lapse of twenty years Mr. Baker Brown's ruin is a matter of regret. The voices of his colleagues who knew the diseased condition of his brain ought to have had greater weight with his professional judges, and milder measures ought to have been adopted, measures less likely to bring scandal and discredit on the profession, of which Mr. Baker Brown was a distinguished ornament. This, I predict, will be the judgement of another generation when all the actors in the drama are gone from amongst us.

One disastrous result came from the decision of the Obstetrical Society at once, as might have been expected. The operation of clitoridectomy was absolutely discarded, and I have never heard a surgeon say he had performed it since 1867. Yet I am certain that in many cases it would be useful. I have performed it once in a case where it was suggested by Dr. Thurstield, of Bridgnorth, for reasons altogether too disgusting for publication. The following letter from Dr. Thurstield, two years after the operation, completely justifies his suggestion and my carrying it out:—

“39, High Street, Bridgnorth, May 29th, 1888.

“My dear Tait.—Your request that I will send you a report of Miss J’s case since the operation of clitoridectomy was performed upon her two years ago I hasten to comply with.

“You will remember I told you a few months after the operation that she was dreadfully depressed in spirits and annoyed she had submitted to it. Soon afterwards she became better in health and strength, and now I am glad to say she is improved morally and physically. She is nurse, companion, and governess to her sister’s children, and when I saw her a month back, at first I did not recognise her, she was so bright and cheerful in manners and appearance. My opinion of her case is that the operation has saved her from suicide or the asylum, and I believe she will be, instead of an incumbrance and anxiety to her friends, a comfort and help.—Believe me, dear Tait, sincerely yours, W. THURSFIELD.”

The clitoris is peculiarly apt to be the point of origin of epithelioma.

Meatus Urinarius.—This orifice is apt to be involved by any inflammatory attack, either of catarrhal or specific origin, which may affect the vulva. It is also sometimes the seat of a chronic inflammation, seen in elderly women, which does not spread away from the meatus, and which is the cause of great suffering. Chronic inflammation of the meatus is also an occasional result of the use of the catheter after abdominal sections. A few applications of nitrate of silver generally suffices for a cure.

The most common affection of the meatus urinarius is that for which I have used the name of vascular growth, and which has been variously described under the terms of “painful tumours of the urethra,” “urethral caruncles,” (Simpson), etc. The term I have employed seems to me to be the best, because the only constant features about these growths are that they are always at or very near the meatus, and that they are always vascular. As a rule they are painful, but I have seen many cases where the patients were wholly free from pain. They are very common, and they are not confined to any age after puberty, for I have removed them from young women of twenty, and from old women of seventy and eighty. They are always of a bright crimson colour, bleeding on the slightest touch, and they are generally pediculated, the attachment being to the mucous membrane just outside, at or immediately within the meatus. Sometimes the attachment may be a few millimetres out of the meatus. The shape of the tumours is generally somewhat angular, many of them resembling a cocked hat attached at one of the corners.

I have only once seen one larger than a bean, though Madame Bovin and others figure them as large as a cherry. They are always very friable so that when seized by forceps they readily

break up. As a rule, they give rise to much pain and discomfort on micturition, and they may render intercourse impossible. Sometimes, however, as I have said, they are absolutely painless. For their relief, the best remedy is removal by the cautery, and for this Pacquelin's instrument is very convenient. Care should be taken to destroy a piece of mucous membrane along with the base of the tumour, though with this precaution they are very apt to return. They are very frequently associated, in women at the middle period of life, with the vascular degeneration of the mucous membrane already described; and, from a number of observations which I have made on their structure, I have concluded that they have much the same origin. The chief histological characters of these growths are the abundance of loops of capillaries, irregularly dilated and having very thin walls, with a singular deficiency of cell elements and fibrous stroma. I have also seen nerve fibres in them. These facts explain a great many of the features of these growths, and it is quite possible that they are progressive, in the same way as in the vascular degeneration previously described, for their recurrence is not the recurrence of malignancy, but appears to be rather the invasion of another though neighbouring district. The fact that they never reach any great size is in support of the view I have advanced, that they are mere dilatations of the capillaries from the atrophy of the surrounding tissues. I have seen no indication, however, that these growths ultimately cease to recur; for almost the last case in which I have operated was one in which, during a period of as long as forty years, they had been removed at intervals of every four or five years.

I have seen the meatus the seat of a stricture which was the result of cicatricial contraction. It was cured by slitting the urethra up for about a third of an inch. I have also seen an encephaloid growth originate at this spot, and after repeated removals destroy the patient.

Perinæum.—Abscesses of the perinæum may result from a chill received by sitting on cold damp ground, from violence, from injury in labour, or from causes beyond the reach of discovery. The disease is to be easily recognised by the hard, painful swelling, and by the agony which ensues when the bowels are moved. These abscesses should be opened freely and early, for they are very apt to open into the bowel and form troublesome *fistulæ in ano*, requiring subsequent operation. Their contents have that peculiar fœtor already referred to. *Fistulæ* resulting from perinæal abscesses are often very troublesome. I have seen them running up between the vagina and rectum, and opening into the latter canal as high as three inches from the anus. In such cases there is some risk in dividing the whole tissue by the knife, for I have

seen troublesome bleeding from an inferior hæmorrhoidal artery. I have adopted Dittel's elastic ligature with great advantage in some instances, passing an elastic thread of soft rubber through the track of the sinus, and tying it tightly round the inner wall of the sinus. A dose of morphia should be given to diminish the pain. In about sixty hours it cuts its way out and the sinus heals from the bottom. Another way is to divide the wall on a director by means of Pacquelin's cautery (v. p. seq.)

It is not unusual to find more than one sinus, and then it is best to treat them one by one, as sometimes the division of one will cure them all. Perinæal fistulæ may also result from the passage of the contents of a pelvic abscess down alongside the rectum or vagina, a condition which will be considered more at length when I speak of pelvic abscess.

Laceration of the perinæum to some extent is the almost inevitable result of a first labour. Unless a painful fissure or a tender cicatrix be left from imperfect recovery, it requires no treatment. A fissure may be either divided or treated by caustic, and a tender cicatrix will be relieved by the occasional application of strong carbolic acid and the use of an astringent cerate.

There are two conditions of the perinæum which require surgical repair. The first is almost, though not entirely, confined to the hospital clientèle, rarely occurring in private practice, by reason of the fact that the women who constitute our private patients are better cared for, are allowed to rest longer after their confinements, and engage in less heavy occupations than those poor sufferers who have to seek relief at the hospital. This condition is one in which the perinæum is stretched by repeated labours, while the uterine ligaments are not sufficiently powerful to sustain the heavy sub-involved uterus characteristic of the hospital patient. A complication is also due to the careless habits of these women in allowing over-distension of both rectum and bladder, so that the disabled perinæum will allow a protrusion of uterus or of rectum (recto-vaginocele) or of bladder (vesico-vaginocele) or of all three (complete protrusions); conditions which I shall speak of more in detail afterwards. A great many pessaries have been devised for these complaints, by far the best of which is Simpson's shelf pessary; but I have given them all up for

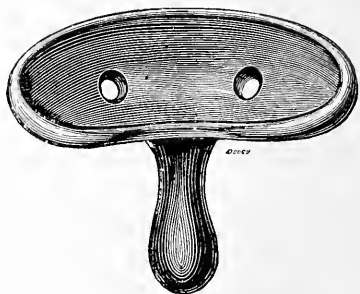


FIG. 8.

the reason that the women will not attend to them, coming back years afterwards, having worn the pessary all the time, with a rectal or vesical fistula—or worse still, they go to other surgeons to air their troubles, and similarly the patients of other surgeons have come to me. Therefore I will have no more to do with pessaries for the relief of protrusions in hospital practice. I perform in such cases a simple operation which I term extension of the perineum, and I use it for protrusion of the uterus, or rectum, or bladder.

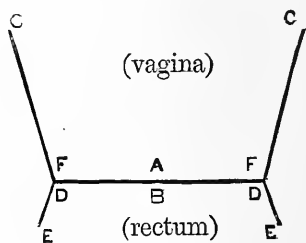
For protrusion of the uterus I operate from behind forwards, truly extending the perineum. For protrusion of the bladder I operate from before backwards, making, as it were, a second and inverted perineum. But the operations are practically the same. They make an artificial shelf on which the previously protruded organs rest and by which they are retained completely. Of the operation for protruded uterus I can now speak with the utmost confidence, for I have cases in which it has maintained absolutely perfect results for more than ten years. Of the operation for protrusion of the bladder I cannot speak so positively, for my efforts in that direction have been very recent. The operations are very simple. For the extension of the perineum from behind forwards I make, by means of a sharp pair of pointed scissors, a horse-shoe incision round the perineum, the horns extending as far forwards as I judge to be necessary. It is made deeply into the substance of the labia on each side, and when its flaps are separated it makes a **V**-shaped groove on each side. As many silk-worm gut sutures as seem necessary—generally three or four—are inserted by a handled needle, exactly as recorded in vesico-vaginal fistula (second method), the needle entering well within the margin of the wound so as to open out the **V** completely and evert its lips. The outer flaps of each **V** on the several sides are turned outwards, and the inner turned correspondingly inwards, and when the stitches are tightened they are in this way approximated as plane surfaces, and so they unite, making a very firm and thick platform for the displaced organs to rest upon, and this rarely gives way. I generally now leave the sutures in for three or four weeks.

For protruded bladder the incision is reversed, the base of it being turned outwards and being kept above the opening of the urethra, where there is generally plenty of tissue to permit of the incision, though that is not of much consequence, the necessity for support being chiefly at the centre of the vestibule. I do not know whether this operation will bear the test of time, but I do not see why it should not. Certainly every other operation I have tried for bladder protrusion has failed.

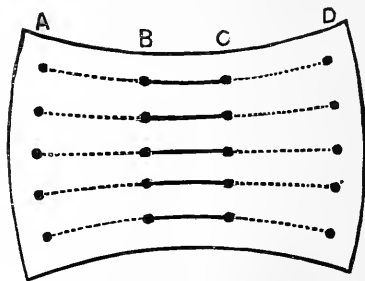
For torn perineum the operation again is the same in principle, though different in detail. When the marginal folds of the buttocks are fully drawn asunder in such a case, the old tear is

displayed by a thin white line of cicatrix, extending transversely to the axis of the rent, which of course was at right angles to the plane of the perinæum. The healing of the tear has taken another direction altogether, and we have the cicatrix at right angles to the wound. This is, so far as I can think out the question or know the facts, wholly unique in its occurrence. It forms the basis of the principle of the operation which I perform, and that is absolutely the opposite of the principle of all denuding operations. The scheme of my operation is to restore the old rent and unite it at right angles to its representative cicatrix—that is, at right angles to the plane of the perinæum. In this way, and in this way only, can the perinæum be truly restored, and from this operation only can it be hoped that the restoration will stand the attacks of subsequent labours, as a large number of my restorations have done. I do not know of one having been torn a second time.

Having the folds of the buttocks pulled firmly apart so that the cicatrix is put on the stretch, I enter the point of the scissors at its extreme end on one side, and keeping strictly to its line, I run through to its other extremity. The incision is about three-eighths of an inch deep and it forms two flaps, a rectal and a vaginal. From each end of the incision it is carried forwards into the tissues of each labium for about an inch, and again backwards for about a third of an inch, making a wound like this—



The vaginal flap *A* is held upwards (the patient being on her back) and the rectal flap *B* being turned downwards, the angles *AFC* being pulled by forceps diagonally upwards and inwards towards the middle line, and the angles *BDE* being pulled downwards and inwards. The lines *CE* thus become curved in the other direction and the wound takes this form—



By means of a stout-handled and well-curved needle, the silk-worm gut sutures are entered on one side about an eighth of an inch within the margin of the wound (so as not to include the skin) at the dots *A*. They are buried deeply in the tissues as far as *B*, and then the needle is made to emerge so as to miss the upper angle of the wound. The needle again enters at the large dots *C*, and emerges at the dots *D*. By thus missing the upper or

deep angle of the wound between *B* and *C*, the two great and divided masses of the old perinæum, which lie in the parallelograms respectively bounded by the lines of large dots *A—B* and *C—D*, are accurately adapted. The rectal and vaginal flaps respectively *point* into the rectum and vagina, and, like an old-fashioned flap valve, prevent noxious material entering the wound. The resulting mass of perinæum is amazingly large, and union is almost inevitable, for I have failed only twice in many hundreds of cases, and then because there had been previous denuding operations. The resulting cicatrix is absolutely linear, and so resembles the natural raphe that in three or four months after the operation it is quite impossible to determine, from the appearance of the parts, that the perinæum has ever been injured, for there are no stitch-hole marks left to tell the story. The pain experienced after the operation is trifling compared to the old method of quilled or shotted suture. I leave the stitches in for three or four weeks, and take great care that the rectum and vagina are washed out daily. When previous denuding operations have made the tissues scanty, deep relaxing incisions should be made in the axis of the ramus of the ischium on each side.

This operation differs essentially from all which have been proposed by previous writers in several most important particulars, both in principle and detail. In the first place, all other methods have proceeded by a process of denudation—that is, valuable tissue has been removed—so that should the operation fail the patient is just thereby so much the worse. In my place nothing is removed, and, therefore, if the operation fails the parts simply return to their abnormal state, not to one which is more unlikely to be remedied. Denuding operations are wrong in principle, in so far as they are mere attempts to return the vagina and rectum to their completely tubular forms, and really makes no attempt to restore the perinæum.

My operation, on the contrary, really restores the perinæum to its original form and dimensions, and makes the patient “as good as new.” That this is so can be seen at once on considering that the transverse incision, in splitting the septum with its small extimores, fore and aft, really reproduces the original perinæal tear, which runs in the antero-posterior plane of the body. But the rent has healed in the bilateral plane of the body, as shown by the transverse position of the white line of the cicatrix. The new incision is made in this transverse line, but the wound is closed at right angles to it—that is, in the position of the old congenital raphe. Then as the whole structure of the perinæum is opened up and parts formerly continuous are re-united absolutely in their original position, the torn ends of the sphincters are thus again continuous, and complete functional activity is restored. That this is the fact

is the uniform experience of the patients. The peculiar method of inserting the sutures is essential to this means, for in this way only can the old relation of parts be restored.

Finally, no other kind of operation will stand the strain of another labour, but the results of my method have done so in twenty-six cases without injury, and I do not know of any in which they have given way.

The annexed woodcuts shows an additional method of repair in a case where the rent extended very high up the rectum, and was too great to be included in one set of sutures, and a double or even a triple set was necessary. The first figure shows how, in such

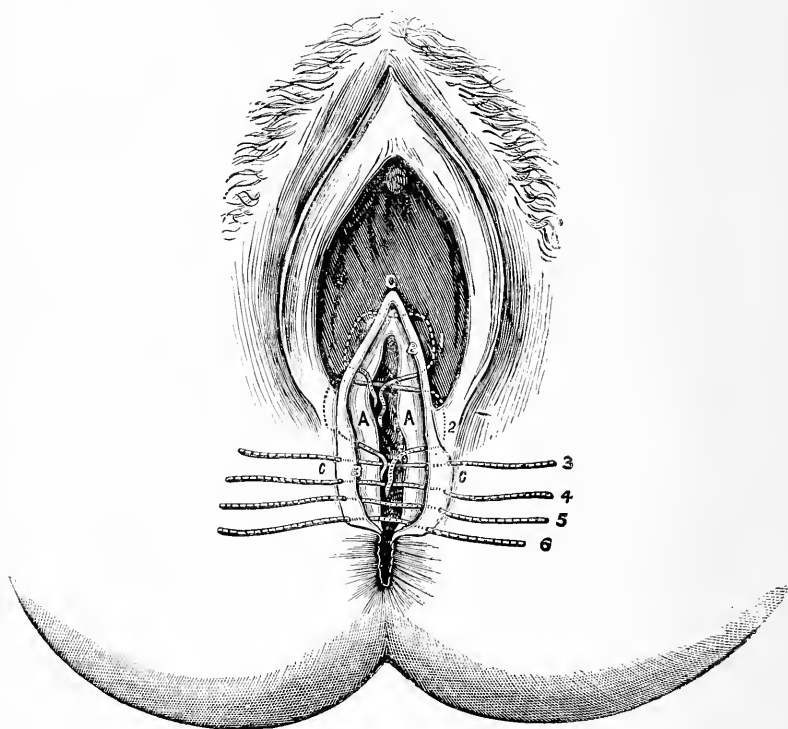


FIG. 9.

a case *in situ* you must miss the top angle of the wound at *C* to bring together the opposing surfaces *A A*, and how at *C* the stitches 3, 4, 5, and 6, which in ordinary cases constitute all the sutures that are wanted, enter on the inside of the line of the wound, and on the outside of the marginal flap *A*, which is turned into the rectum, everting similarly the marginal flap *B*,

which is turned into the vagina. The next figure shows the closed perinaeum with the threads of silk-worm gut outside the line of the wound.



FIG. 10.

III.

THE VAGINA.

HITHERTO we have had to deal with conditions requiring little or nothing to be said concerning the methods of investigation involved, for they amount to nothing more than mere inspection in one or other of the usual attitudes of the patient adopted in practice. These are two, the first being that in which the patient lies on the left side, slightly turned over on the face, with the knees well drawn up in front of her, and the feet turned forwards out of the way of the examiner. For the usual examination of the external genitals this position will suffice for all purposes, save when it is necessary to examine the pubis or the flexure of the groins, when the patient must be on her back. An exceptional position—upright—is sometimes required to ascertain the exact state of matters in a doubtful hernia, and a still more exceptional position—upright on the knees, with the thighs abducted—when a doubtful displacement of the uterus or the extent of a protusion must needs be carefully determined by the body being slightly bent forward, and the examination made from behind.

In every kind of investigation of the genitals the utmost delicacy and consideration for the feelings of the patient ought to be the second object of the gynaecologist, the first being an investigation of the case as accurate as possible, and as complete as necessary. Englishwomen, I am glad to say, of even the humblest class, will not permit the methods of investigation practised on the Continent, and I am sure that such a gynaecological chair as we see largely advertised in American medical journals would soon be the ruin of any British gynaecologist who introduced it into his consulting-room. Such barbarous and clumsy methods and implements are wholly unnecessary. All that is wanted is a couch on which the patient can lie comfortably, and of such a height as will not necessarily fatigue the operator. No uncovering of the patient should be made beyond what is absolutely necessary, and the more experienced a gynaecologist becomes the more he will find he can discover with his fingers without using his eyes. The more he is able to do in this way the more he will secure the confidence of English patients.

In unmarried women, particularly in young girls, the best method of examination to be employed is that of inspection. Even exploration of the vagina by the finger requires, in every case, a strong justification, and I say unhesitatingly that any man who

employs a speculum in the examination of a woman who is a virgin is unfit for the practice of his profession. As I shall say more decidedly further on, the speculum requires to be used in examination very rarely: it should be used as an assistant for operative purposes only.

When the necessity for examination has been fully determined upon the most satisfactory results will be obtained by having the patient in bed, and the busy gynaecologist will do well to have a room, with an attendant, where patients can be fully undressed and properly couched. The question of this attendant has frequently been discussed, and we often see effusive communications in the medical journals concerning the necessity of always having a third person present at such examinations; and perhaps it is better to have such an assistant at hand, though I think occasions where she is wanted for the purpose of protection must be extremely rare.

The first step in a complete examination is to have the patient on her back, and to direct her to allow the abdominal wall to become quite flaccid. It is very curious how difficult this simple direction is to the minds of some patients, and very often an examination is rendered absolutely futile by the persistent rigidity in which they keep the abdominal wall. But a little patience will overcome this, and then the first step in the examination—that of passing the hand lightly over the abdomen to discover the presence of any swelling, tumour, hardness, inequality or tenderness, specially of the groin—may be easily accomplished. It may be necessary to inspect the abdomen, but this should not be done if it can be avoided. If it is necessary to employ the method of percussion you must have the patient uncovered. If the abdomen is prominent the outline of any solid mass must be carefully observed, and it must be ascertained whether there is fluctuation present or not; then the question of a dull or tympanitic note and its various relations must be carefully considered. All these details will be fully discussed in their proper places.

What we are dealing with now is chiefly the examination of the pelvis, for which purpose the patient had much better be asked to lie on the left side, the head and shoulders placed well down away from the examiner, and the knees drawn well up in front of the patient, with the feet forwards. In this way the most complete and satisfactory examination of the pelvis from the vagina or rectum can be made, either by one hand or by what is known as the bi-manual method.

The second step is to dip the point of the forefinger into some greasy substance, either oil or vaseline, or some kind of soap made for the purpose—anything will do which will enable the finger to glide over the parts with as little friction as possible, and at the same time protect the finger from the inoculation of poison, for it

must not be forgotten that this is one of the most important objects in the use of grease in vaginal examinations. The communication of syphilis to the finger of the examining practitioner is only too frequently a terrible incident in practice, and it has been my own misfortune to know nearly a dozen lives either entirely sacrificed or rendered miserable for ever after by this unfortunate occurrence.

The first point in the examination is to ascertain the condition of the labia. If they are tender, covered with discharge, or swollen, the presence of gonorrhœa or some kind of injury must be suspected. To decide these questions a visual inspection must be made. Should no such conditions present themselves the finger must be carefully inserted between the labia, and the condition, presence, or absence of the hymen determined. If there is a perfect hymen and the patient a virgin, the utmost care must be taken to proceed so as to give the patient the least amount of pain. Supposing the finger to have passed into the orifice, the condition of the vagina must first be determined—has it a large cavity or has it a cavity of the virginal condition, has it any foreign body in it, does it present the appearance of a previous maternity, are there any growths in its cavity, and does the mucous surface feel healthy? The condition of the bladder and the rectum, whether distended or tender, or whether they are occupied by any growths, has also to be noticed. The condition of the uterus next occupies our attention, and the first thing is to discover the condition of the cervix, whether it is open, smooth or rough, occupied by any kind of new growth, or the subject of any malignant or any other kind of ulceration. All this can be determined by the finger, and by the educated finger alone, without difficulty. We then have to do with the mobility of the uterus, and, if fixed, to determine as fully as possible what the condition is which fixes it, whether by malignant growth or the inflammatory exudation due to chronic disease of the uterine appendages. Disease of the rectum may often be determined with a fair amount of accuracy by a vaginal examination. But supposing we have the uterus not fixed and the other viscera quite free, we have next to determine the position of the uterus, as to whether it is in its normal axis or retroverted. This can be easily accomplished by the skilled fingers without the use of the sound, an instrument which has been the source of far more harm than good. Passing the finger up behind the cervix, if the uterus be retroflected or retroverted, the fundus can be felt immediately in its abnormal position and the continuity of the cervix easily traced. Conversely what is usually called ante flexion and anteversion can be traced with great ease.

Then the conditions and relations of the uterine appendages may have to be determined. This alone, almost, is the occasion for the employment of what is known as the bi-manual method,

although in the great majority of instances even here, in the case of the experienced gynaecologist, the use of this bi-manual method is unnecessary. Any coarse disease of the uterine appendages can be perfectly well ascertained by examination by one finger, but when the appendages are perfectly normal the ovaries and tubes can be mapped out quite easily with the fingers of one hand pressed on the groin opposite the side which is to be examined, and pressing the walls downwards and inwards so as to approximate the points of the opposing fingers; in this way it very rarely happens, indeed, that it is impossible to make out the relations of the uterine appendages. In young virgins, where it is necessary to obtain some kind of information as to the condition of the pelvis, and where it is, as indeed it generally should be, considered improper to pass the finger into the vagina, a very fairly accurate notion of the pelvic condition may be ascertained by rectal examination. But in making this examination it is not at all unusual to find that the beginner mistakes the neck of the uterus for an abnormal condition: it should jut angularly into the rectum, and feel like a tumour; and it is not an unusual thing to find a normally placed cervix sent to the specialist, having been discovered in the rectum and regarded as a case of retroversion. The presence of hæmorrhoids, fissures, invagination and malignant or any other kind of new growth may be accurately determined by digital examination of the rectum.

Finally there comes the question of examination by inspection. If the mere inspection of the labia is all that is required, this is easily done by separating the two lips by the fingers of the opposite hand. If it is requisite to have an inspection of the vaginal mucous surface or of the opening into the uterine canal, any one of the varieties of specula may be used for this purpose, by far the best of these being the simplest kind of contrivance, applicable to almost every purpose which may present itself, the glass-barreled speculum of Fergusson. It should be used of plain, transparent, toughened glass; no blackening or silvering is required, the advantage of the transparency being that this simple form of instrument must always be noticed to be clean before it is used, whilst if the outside be covered with black it is perfectly easy to believe that a dirty speculum might be inadvertently employed, and disease thereby communicated. There can be no question whatever that this accident has often happened, and therefore all these blackened specula ought to be abolished at once. They certainly have been so in my practice for many years. Specula of different dimensions are requisite, of course, for different patients. Not only is this simple form of speculum the best for examination, but it is by far the best in almost every kind of operative work. Occasionally the duck-bill speculum of Sims may supersede it with advantage, but, as I have already often said, examinations by

specula will diminish in proportion as the gynaecologist becomes more skilled in his art. Now I rarely, if ever, have to use a speculum for diagnostic purposes. I limit its employment to the application of some medicant to the inner surface of the vagina or the intra-uterine canal, or for the purpose of performing some operation.

I entirely and unhesitatingly condemn all kinds of bi-valve and tri-valve speculum contrivances with hinges, joints, and levers, as being expensive, dangerous, and absolutely unnecessary. If a man cannot do his work with Fergusson's speculum, occasionally replaced by the duck-bill, he ought to give it up. A workman who needs complicated tools is an inefficient one or a quack.

The use of the sound for the purpose of examination is also to be strongly condemned, save in most exceptional instances, and it ought to be employed only by those who have special experience in gynaecology. The exceptions where its employment is demanded will be considered in their appropriate places.

Finally, for the minute investigation of pelvic and abdominal changes of an abnormal kind the employment of an anæsthetic is of immense gain, for it relaxes the muscular rigidity of the abdomen, and enables a research of the organs to be made of a far more complete and satisfactory kind than when the patient is conscious. The best anæsthetic for every purpose is a mixture of one part of chloroform with two parts of ether. What I have to say further on this most important subject I shall defer till the chapter on Abdominal Sections.

The inflammatory and ulcerative diseases of the vagina differ only in a few details from those already discussed in connection with the vulva, so that much which I have already said may be taken to be applicable here. Thus, the so-called strumous vaginitis of children may sometimes be found to be due to foreign bodies placed there by the patient herself, or by some of her playmates. Several extraordinary cases of this kind have come under my notice, showing a condition of depravity at an early age altogether shocking. Recently a girl of little more than five years of age was brought to me from whose vagina I removed a number of pellets of her own hair. She was in the habit of rolling a few hairs taken from her head into pellets between her fingers and this habit had been noticed by her mother, but had been disregarded. It was only when I removed about thirty of these pellets from the vagina that the importance of this curious habit was seen.

Chronic inflammation of the vaginal canal in children is really rare, as the trouble is generally confined to the mucous surface outside the hymen. When the disease is situated inside of that point it is extremely troublesome, and gives rise to great distress in the minds of the parents, and no small amount of suffering on the part of the patient.

The continual acid discharge frets the external genitals and induces the child to scratch, and it stains the linen profusely. As I have said before, I see no good reason for regarding the disease as strumous, though its cure is certainly assisted by general constitutional treatment, as removal to the sea-side from inland districts, and to a high bracing climate if the patient usually resides on the flats. Injections are somewhat dangerous and do little good, the best remedies being pencils of cocoa butter containing iodide of lead, boracic acid, gall and opium, and similar applications.

A somewhat severe, but certainly satisfactory, proceeding is to swab the vagina out with strong carbolic acid; but this must be kept as a sort of last resource, for it can be done only under an anaesthetic, and the utmost care must be taken that the application does not involve any of the skin.

Somewhat analagous to this condition is one seen occasionally in adult women, usually such as have not had children; indeed it is a bar to intercourse as well as to pregnancy, and is a dreadful and inveterate disease. I have given to it the name of *papillary vaginitis*, for the papillæ of the vagina are seen standing out from the thick layer of creamy pus which constantly bathes it, like the beads of a raspberry, and they are most sensitive to the touch. I know of only one way of curing this disease, and that is to lightly sear the whole surface affected by means of Pacquelin's cautery. I have no reason to believe that this disease is ever gonorrhœal in its origin; in fact, the majority of my cases have been such as to exclude that consideration altogether. Ordinary chronic vaginitis may be either catarrhal or gonorrhœal in its origin, but it does not present the special appearances of the papillary disease, and especially it does not give rise to the intense suffering involved by the latter disease. And it must be borne in mind that the fact of any vaginal discharge communicating a urethritis to a husband is no test of its being of specific origin; for that may arise from the discharge from the cervix during the process of uterine involution, under circumstances which put gonorrhœal infection out of the question altogether.

There is a special form of vaginitis in old women which gives rise to a profuse watery discharge, with only a slight purulent character, to which I give the name of *senile vaginitis*, and the symptoms of it are often so pronounced as to give rise to the suspicion that there may be malignant disease. It causes a great deal of itching and discomfort, and is very intractable.

All these chronic inflammatory diseases are far better treated by soluble pessaries than by injections, and for two reasons: First, the disease may be driven upwards into the uterus by the syringe and spread thence into the tubes and peritoneum; the action of pessaries is practically continuous, whilst that of injections is

intermittent. It must not be forgotten, however, that all astringents make insoluble compounds with albuminous discharges, so that if a patient is using astringent pessaries, masses of this insoluble material are apt to form round the cervix, and they require to be periodically washed away.

A most unfortunate invention was made by the late Dr. Marion Sims of the term "vaginismus," which he meant to apply to a condition which I venture to say does not exist—a spasmodic contraction of the sphincter vaginae muscle. This muscle is figured in text-books, but two years ago I made a systematic enquiry amongst the teachers of anatomy in this country and abroad, and the result of that enquiry was not only to throw grave doubts on the existence of the muscle, but to make it certain that the few bundles of muscular fibre which have been occasionally seen in such a position that they could not act as constrictors of the vagina, never could by any possibility give rise to the symptoms referred to them. The term "vaginismus" is, in fact, only a cloak for ignorance and imperfect examination. The cases in which the symptoms referred to this disease are common enough, and, therefore, the disease is regarded as a common one, and directions are given in most text-books for the division of the hypothetical muscle or the forcible distention of the canal. The fact is that the symptoms are nearly always due to the presence of a urethral caruncle, or to the disease already described at page 52, and for these diseases such treatment is futile. I have seen many cases of so-called vaginismus, but I have always discovered some such reason for the symptoms, and I do not believe in the spasmodic contraction of a muscle which has existence only as a dissecting-room curiosity.

When a woman complains that intercourse hurts her so that she cannot submit to it, the surgeon may at once make up his mind that there is some definite cause for her condition, and that if he looks with sufficient care and with the eye of experience he will surely find it. I have had a large number of cases sent to me as vaginismus, for the purpose of having the operation of division of the sphincter muscle performed, but I have never yet performed it; for the simple reason that I have always been able to find a more tangible cause for the patient's distress than the hypothetical contraction of the sphincter muscle. One of the most common causes of the patient's sufferings in these cases are the fissures resulting from marital rents, or too frequent intercourse resulting in excoriations of the nymphae, or chronic vulvitis. The great majority of such cases are cured by the use of simple cerate and the restriction of intercourse within moderation. Other cases will be found to be due to painful warts, urethral caruncles, or patches of the vascular degeneration of the mucous membrane already described. This latter cause is especially frequent near the

climacteric period, and a patch the size of a millet-seed will be found enough to give excruciating agony. A few months ago a lady came under my care from one of the northern counties, upon whom it was proposed to perform the division of the muscle. I found a small patch, touched it with carbolic acid, advised her to use cerate, cautioned her that the symptoms would probably return in a few months, and that they would need fresh applications of the acid; but up to the present moment she is perfectly free from all discomfort. Cases of true vaginismus may occur, but I must assert that as yet they are quite unknown to me; and it seems just as reasonable to set cases of acute retinitis down under the prominent symptom of photophobia, as to class the cases I have referred to under vaginismus.

Polypus of the vagina is a very rare disease. I have seen five cases. Two of the tumours were small solid myomata growing from the posterior wall, and the third a cystic myoma growing from a broad pedicle on the left wall. The tumour was as large as a Mandarin orange, and is now in the Museum of the Royal College of Surgeons. Dr. L. A. Neugebauer has collected (*Prager Vierteljahrsschrift*, 1877) thirty-four cases of fibro-myomatous growths of the vagina, chiefly polypoid in form, and growing from all parts of the vagina and at all ages.

Cancer of the vagina has been, with only one exception, in my experience always of the kind common in mucous tracts—ulcerative epithelioma. Usually it is an extension from the cervix, but it may arise in a centre situated in the vaginal walls. In such a situation it gives rise to few symptoms, and not unfrequently the first real trouble is found in the formation of a vesical or rectal fistula. My experience in removal of vaginal epithelioma, as in dealing with it in every way, has been uniformly unsatisfactory.

Papilloma of the vagina consists in an alteration of the mucous membrane, whereby the papillary elements become greatly hypertrophied. It is found most frequently to affect the vagina just within the vestibule, but I have also found it on the nymphæ, and the area affected is generally not very large. It appears red and velvety, bleeding easily, and it is exquisitely tender to the touch. If carefully dried, its nature can be recognised by the minute finger-like processes into which the papillæ have become elongated. If a piece be removed and examined by the microscope, it will be found that the inner structures of the papillæ are chiefly affected, the connective tissue, stroma, the nerve-fibres, and the vessels, being all thickened, whilst the epithelial covering appears to be quite normal. The papillæ are not only elongated and thickened, but they become branched and even dendritic. The chief symptom, pain, is clearly due to the pathological

changes, and it is often so acute as to render the patient's life a burden to her. I have seen many cases of papilloma set down as vaginismus. The disease may occur at any age, and can be treated effectually only by complete removal, either by caustics, such as the red-hot iron, perchloride of antimony, or a saturated solution of chromic acid; or, better still, by the use of sharp-curved scissors.

In speaking of the various forms of prolapse which affect the vagina I have adopted a slightly different nomenclature from that generally in use, but I think the additional convenience in classification more than compensates for the innovation. I propose to class all these displacements, with one exception, under the name of *vaginocele*, and to define the variety by prefixing the name of the structure specially implicated. Thus, by far the most common of these prolapses is the *cystic vaginocele*, which consists of a distention of the trigone of the bladder, accompanied generally, and I believe always in the first stage, by thinning of the wall. In the milder forms it consists of an oval swelling, which may be visible on examination only when the patient strains, or when the bladder is very much distended; or it may form a permanent tumour, extruding from the vulva, with the mucous membrane transformed almost into skin, the wall of the bladder very much thickened, and then it generally is a source of considerable discomfort. This prolapse is, according to my experience, mainly due to the habit, so prevalent among women of retaining the urine in the bladder until it is over-distended. The differences in the anatomical relations of the bladder in men and women give rise to very different habits in this respect. In the former, the neck of the bladder and the trigone are firmly supported, so that over-distension can be accommodated in the upward direction only, and the weight of the superincumbent viscera makes it much sooner painful than in women. In the latter, a large amount of accommodation for over-distension can be obtained by dilatation of the unsupported lower wall, especially if the vagina has been previously dilated by the birth of children. Our social habits make it much easier for men than for women to empty their bladders with sufficient frequency, so that women become accustomed to supply their additional accommodation at the expense of their organs, and the trigone being mechanically the point of least resistance, it becomes gradually dilated. As this dilatation proceeds, it becomes more and more difficult to empty the bladder completely, so that ultimately a residuum of urine is retained at the point of dilatation, which decomposes, and gives rise to chronic catarrh of the bladder, reducing the patient to very much the same condition as we find in men with enlarged prostate. This inflammation chiefly affects the dilated sac, so that the walls become thickened, and, finally, the *vaginocele*

becomes irreducible. In private practice, cases so bad as this are very rare; but in hospital practice we see them frequently, their prevalence there being due to the extreme carelessness of women in the lower rank of life about the proper performance of their functions. In the earlier stages of this form of prolapse little inconvenience is experienced, and the patient is generally made first aware of it by the sudden discovery of the lump. If she applies for advice then, and is properly treated, the deformity is very easily cured. She must be instructed never to allow the bladder to remain for more than eight hours without being emptied, and not so long as that if she can manage it; and she must be provided with a properly fitting support. This consists of the smooth ebonite ball pessary, made for me by Mappin and Co., which has no holes in it, and which is fitted with a loop of very strong whipcord. The old-fashioned ball pessary was furnished with a number of holes, through which mucus flows, and, becoming decomposed in the cavity, gave rise to the most offensive factor. If the loop be not properly fastened and made of very strong flaxen whipcord, it will break, and then in all probability the patient will wear it for some years without removing it. The ball should be removed every night, the vagina well washed out with lotion of one per cent. of permanganate of lime, and the pessary replaced in the morning. By a perseverance in this treatment for some months, or even years if necessary, every patient so affected will be at least made comfortable, and the great majority of cases may be permanently cured. In the worst class of cases, where there is a chronic catarrh of the bladder, this must first be cured by injections *into the bladder* of solutions of one or two per cent. of neutral acetate of lead, the bladder being first completely emptied of urine. This treatment may easily be carried out by the patient herself after she has been taught how to pass the catheter. If the protrusion be irreducible, and the inconvenience caused by it be very great, I should not hesitate to remove a piece of the whole thickness of the wall of the bladder, of appropriate size, and close the wound as in a fistula. But this is manifestly a form of treatment to be reserved for the very worst cases only, and for others I do not believe that any operative measures are necessary. A variety of ingenious proposals have been made for the cure of cystic vaginocoele, all depending on the principle of removing a piece of the vaginal mucous membrane, and by bringing the edges together temporarily to diminish the prolapse. I say temporarily, because for any permanent purpose all such operations are a delusion and a snare, on account of the practically unlimited extensibility of the vaginal mucous surface as long as the producing causes are at work.

Recto-vaginocoele is of the same character, and is produced by much the same kind of habit, in the matter of neglect of the

periodicity of function, as cystic vaginocoele. The terrible carelessness of the majority of English women about the evacuation of the rectum is scarcely creditable, and can only be fully understood by those who have had experience in the out-patient room of a hospital for women. Many women do not have their bowels opened oftener than once in ten days, and to accomplish this they require some purgative. Like every other habit, the use of the purgative grows with the need of it, until we cease to wonder at the story of the patient who used to take a breakfast-cupful of pills once in every six weeks. Regularity of intestinal evacuation is a mere matter of habit, and there is very rarely any need whatever for the habitual use of aperients. I always instruct my patients to retire to the closet immediately after breakfast, and never to omit doing so. For the first week or two the efforts may be futile, and it may be necessary to direct the use of a suppository of gamboge or aloin about half-an-hour before breakfast, or the use of a small enema. But perseverance will enable the artificial aids to be dispensed with, and if once the habit is fully established it is not easy to discontinue it. The use of the ball pessary, formerly described, will greatly assist in the cure. In some specially careless women we find both cystic and recto vaginocoele.

Entero-vaginocoele is where there is a vaginal prolapse behind which there is intestine. This is occasionally met with simply as a distension of Douglas's pouch; but in the great majority of the cases it is associated with complete protrusion of the uterus and inversion of the vagina, a condition which will be spoken of in connection with the displacements of the uterus.

Occasionally the canal of the urethra becomes dilated so as to form a small oval tumor, giving rise to considerable discomfort by wetting the patient's dress with the small quantity of urine it contains, a few minutes after she has ceased micturating. The dilatation may also be accompanied by chronic urethritis. A speedy and safe cure may be effected by removing an elliptical piece of the mucous membrane, with its long axis in the direction of the urethra, and bringing the edges together by stitches.

About fifteen years ago I recorded a case of sacculated dilatation of the urethra, which closely imitated a cystic vaginocoele of the worst type, and which forms, so far as I know, an affection not previously described until a paper by me appeared on the subject in the *Lancet* for 1875. I have had a number of cases now, and as they all present similar features, the description of two will suffice.

Mrs. B., mother of a large family, had suffered for many years from a protrusion from the vulva, about as large as an egg, exceedingly painful and quite irreducible. She passed large quantities of very foetid pus from the bladder. The protrusion looked like an ordinary cystic vaginocoele, was very hard, and when

firmly pressed a large quantity of foetid ammoniacal pus escaped from the urethra. It was clearly, therefore, not an ordinary cystocele, but probably a sacculation of the urethra, and the only benefit to be obtained was by its removal. She was accordingly placed under ether, and the lower half of the protrusion was removed by a cut of the scissors. This opened a large cavity lined with thickened corrugated mucous membrane, and at the bottom of it I found an aperture in the lower wall of the urethra, about half-way between the external orifice and the neck of the bladder, large enough to admit a number 9 or 10 catheter. The whole of the lining membrane of the sac was removed, and the cavity closed by deep sutures. The wound healed rapidly, and a complete cure resulted. My only explanation of this remarkable case is the supposition that the sac was congenital, as was also, in all probability, the opening between it and the urethra. The following remarkable case was placed on record by my colleague, the late Dr. Hickinbotham, in the *British Medical Journal* for April, 1882.

"On November 12th, 1880, in consultation with Dr. Young of Erdington, I saw Mrs. S., aged twenty-one, who was daily expecting her first confinement. An examination revealed a huge mass protruding from the vulva, which consisted of a greatly hypertrophied cervix; and in front of it a large soft tumour, which I took for a cystocele. Behind the prolapsed mass, and lying in a flaccid condition against the posterior vaginal wall, was a perfect hymen of the typical sickle shape. The pelvis seemed of average size, and there was nothing in the general state of the patient to cause anxiety. The os uteri easily admitted a finger; and with some trouble (from the extreme length of the cervix) I was able to recognise the head presenting.

"As the patient showed signs of exhaustion, it was decided to attempt delivery without further delay; she was, therefore, chloroformed, the bladder emptied, and with great caution I endeavoured to overcome the rigidly-contracted os. After considerable effort I was able to get in three fingers, when a smart gush of blood warned us that the vascularity of the cervix had not been over-estimated.

"The cranium was perforated and crushed by a small cephalotribe, after which there was no difficulty. She went on well; but the tumour anterior to the cervix began to increase, and there was some pain. On the tenth day it ruptured, and there was a free discharge of puriform fluid, after which convalescence was uninterrupted. Neither during pregnancy nor after labour was there any incontinence of urine, or other trouble connected with the bladder.

"The prolapse of the uterus had occurred quite gradually, so gradually, indeed, as to push aside the hymen without rupturing

it, and so entirely without inconvenience that the poor woman did not know until her marriage that she was different from other women. Her menstruation was always regular, and her health had always been robust. The cause of the procidentia was, no doubt, lifting and carrying heavy weights whilst very young. Six weeks after her confinement she called upon me, at Dr. Young's request. I found the womb still prolapsed, but the os and cervix were nearly natural. The tumour which I have described lay in a flaccid state upon the anterior vaginal wall, or rather hung from it, and a large, hole admitting my finger, still remained. A sound passed into the bladder showed nothing abnormal, and she could hold her urine from morning to night.

"When the cyst was itself examined, by the finger or sound, I could merely make out a large empty cavity between the bladder and uterus, and apparently communicating with nothing."

"She was afterwards admitted into the Women's Hospital, under my colleague, Mr. Lawson Tait, who has kindly given me the following report of her condition, and the treatment adopted.

"On examining the patient, there appeared, protruding from the vulva, what looked exactly like a cystocele, but which had the peculiarity of having a hole, about the size of a shilling, punched (as it were) into its most prominent part. The finger was admitted into a large pear-shaped cavity, having its apex directed up towards the urethra; and it was ascertained that it opened into this canal by a small aperture, not larger than a hemp-seed. When the bladder was injected full of milk, and the external meatus forcibly closed, some of the milk found its way into the sac. The cyst ran backwards as far as the cervix uteri, and seemed to double up on each side of this structure into small pockets. I laid the whole cavity open from the urethra to the cervix, dissected out the mucous membrane over the whole surface, and shortened the remaining flaps of the vaginal surface, so that they met correctly in the middle line when united by suture.

"The removal of the cyst-wall from the cervix was difficult, and the hæmorrhage was profuse and troublesome. The patient made a perfectly uninterrupted recovery, and all traces of the abnormal cyst have disappeared, and the protrusion is cured."

I have no doubt this case is an illustration of the rare form of congenital malformation which, I believe, I was the first to describe, in the *Lancet* of January 9th, 1875. I have seen five such cases, and in two of them the distress of the patients was very great, on account of the urine escaping into the sac, and there becoming ammoniacal and purulent. In the present instance this was obviated by the hole in the depending part of the cyst; but it is perfectly certain that urine in considerable quantity must have passed through the cyst.

The size of the sac in this case was probably as great as that of the bladder, and it was probably five times as large as in either of the other cases upon which I have operated. In all five cases I dissected the cyst out, and found the aperture into the urethra to be very small, being, as I have said, about the size of a hemp-seed.

I think the relations of the cyst, in Dr. Hickinbotham's case, prove its origin to have been congenital, as it is perfectly impossible to imagine that a cyst could develop itself from any structure lying between the urethra and the cervix uteri, so as to have relations so intimate with both, as existed in this case. In all five cases the cure by operation has been complete.

I may just remark, concerning Dr. Hickinbotham's case, that his hypothesis that the absence of symptoms was due to the hole in the cyst, could only be correct after labour, since before that there was no hole. I think a more likely explanation is, that the opening into the urethra was protected in some way by a valvular fold of the mucous membrane, which was sufficient until there was obstruction in front, and more pressure than usual from the bladder. These conditions no doubt obtained during the labour, and then for the first time urine found its way into the cyst, whose contents had previously been unirritating and harmless.

Since the above was written, the patient presented herself at the hospital, complaining of a "lump in her stomach which gave her great pain." Her temperature was 102° , and pulse quick. She was therefore admitted, and examination showed a tender tumour above and to the right of the umbilicus, which I believed to be a movable kidney. A day or two of entire rest in bed seemed to put matters right; the tenderness and fever disappeared, and she was again sent home.

Since my original paper on this subject it has been written upon by Dr. Duplay, of Paris, in a very interesting paper in the *Archives Generales de Médecine* for July 1880, and by Mr. Alban Doran in the *Medical Record* for March, 1885. In a paper of the sixteenth volume of *Archiv für Medicin* there is another case recorded, and the view that I have advanced, that these cysts must be congenital, is supported. Santesson, the author, draws the distinction between a sac caused by simple dilatation of the urethra, and one caused by a sac pre-existing and opening into the urethra either by ulcerative process or by congenital formation.

Wounds of the vagina are always the result of direct violence, which may be either accidental or intentional, or, in a few rare cases, the result of surgical incompetence. It has fallen to my lot to see a considerable number of cases of such injury, and some of these cases were of extreme interest both on surgical and medico-legal grounds. Of those which were accidental, I have seen two cases in which the injury, in one case fatal, was

unquestionably due to the patient's falling, whilst in a semi-sitting position, upon an upright stem. In both cases the injury was at the flexure of the vagina behind the uterus and in both cases I think the peritoneum was injured; but as one recovered, this is, in that case, a matter of conjecture. In the other, death took place in five days from peritonitis, and a small fragment of the patient's dress was found in the peritoneum. No other organ was injured. We ought to have opened that patient's abdomen, and I should do so now as a matter of course.

Sometimes we have serious ruptures, in a few instances known to be fatal, inflicted during coition, where the male organ has been disproportionately large; but the chief trouble with these marital ruptures is, primarily, the hæmorrhage, which may be serious, and, secondarily, the interference with the healing, by frequent repetition of intercourse.

Some years ago Mr. Hammond Smith sent me a case where a large recto-vaginal fistula had been made on the wedding night, and it was difficult to see how it had been done, for the vagina was not exceptionally small, nor was the male organ exceptionally large.

Of the cases of intentional wounds of the vagina, the most common are those in which the injury is done during an attempt at another offence—the procuring of abortion. This crime is becoming fearfully common in our manufacturing centres, and the difficulties which present themselves in procuring convictions render nearly all the efforts of the police ineffectual to stop it. The instruments employed in this nefarious practice are nearly always improper and dangerous, so that every now and then we find death occurring from a punctured wound of the vagina, injuring the peritoneum. As these wounds are always small, and as the examination is usually made some days after their infliction, much care is required to find them in cases where there is suspicion. They are nearly always behind the uterus. One horrible case of intentional wounds of the vagina came under my observation many years ago, where a man murdered his wife during her drunken sleep by pushing a walking-stick up her vagina, through the posterior flexure and up through the liver and diaphragm. Many of the other abdominal viscera were greatly injured, and the woman died from hæmorrhage and shock. The case of course came before criminal courts, and, hardly credible though it may seem, an eminent physician was actually obtained who gave evidence that the wounds might have been suicidal. The jury, however, convicted the prisoner of murder.

There are a few rare cases on record, and it is fervently to be hoped that they will grow rarer as the practitioners of medicine become better educated, where wounds of the vagina have been

made by the use of obstetric implements in the hands of unskilled operators, or in the hands of operators whose skill has been undone by intemperance. One such case I have had the misfortune to witness, in which there is reason to believe that a blade of the forceps was forced through the posterior flexure of the vagina. The expulsive efforts of the patient forced down the intestines through the wound; and the post-mortem proved that the attendant must then have torn down almost the whole length of the intestine, stripping it from the mesentery, and actually dragging the peritoneum off the kidneys and posterior abdominal walls.

The vagina is apt to be ruptured during labour by the continuance of a disproportion between the canal and the fetal head, but there can be little doubt that Dr. McClintock is right when he says: "On very many occasions the vagina has been torn by attempts to force the hand into the uterus for the purpose of turning the child, or of rectifying some real or fancied malposition of the head. It has also been lacerated by the premature or unskilful use of the forceps." The treatment of all such cases is clearly laid down by Dr. McClintock, and from it I think there can be no appeal. Having made "sure that no portion of gut has prolapsed through the rent, we should next endeavour to place the edges of the laceration as accurately in contact as can be done under the circumstances." *Under no circumstances whatever* can cutting the intestines be justified, for McKeever's celebrated case can always be quoted, in which when it was found that four feet of intestines protruded and could not be returned, the intestine was left alone and sloughed, and the patient recovered with a fecal opening into the vagina.

In cases of chronic irreducible entero-vaginocele, the wall sometimes ruptures from sudden strain, and the intestines may be protruded, as in a case narrated by Dr. Fehling, of Leipsic, in "Archiv für Gynæcologie," vol VI., p. 103.

Foreign bodies in the vagina are either such as are placed there by the silly practices of young women of a libidinous tendency, or such as are left there, having been placed by a medical practitioner, by the carelessness and inattention of the patient. In the first class the most extraordinary substances are found, such as hair-pins, tooth-picks, and shaving-brushes, and sometimes these have been allowed to remain in their unexpected position for years, the shame of the patient hindering her from asking for advice until some disaster happens which renders further concealment impossible.

I have met repeatedly with cases where intra-vaginal supports of various kinds have been left unattended to in the vagina for years, until serious accidents have arisen from their presence; and therefore, in introducing any kind of mechanical contrivance into the vagina, care should be taken either that it is of a kind which the patient can remove and replace herself, or that injunctions

should be given that she should have it seen to from time to time. Some years ago a woman came to me in a deplorable state, from a pessary which she had worn for seventeen years, without having had it once removed during that time. It was one of the hollow boxwood ball pessaries, closed at the end by a screw plug. This plug had come out, and the wall of the bladder had grown into the hollow till it formed a large polypus. The outside of the pessary was coated with calcareous matter nearly half-an-inch in thickness, so that it was not only difficult to remove the pessary, but it was even difficult to make out what it was. I broke it up by means of a lithotrite, and removed it in pieces, discovering as I did so, the polypoid growth of the bladder, which was fortunately not injured.

Shelf pessaries are very risky if left unattended to, and accidents have twice occurred in my practice owing to the negligence of the patients in presenting themselves for inspection at intervals. One patient, a very stupid Irishwoman, presented herself two years after I had placed a shelf pessary for an enormous entero-vaginocele, and I found that she had a large hole into her rectum, and another into her bladder. She, however, expressed herself as perfectly satisfied, and declined all operative interference. Even ring pessaries are not free from danger if neglected; indeed, no pessary is.

In fact, my belief in pessaries has so much diminished with experience, and I have seen so much more harm than good from their employment, that I have practically abandoned their use for the ignorant women who form the bulk of our hospital patients. Even in private practice their employment in my hands becomes less and less frequent, as I shall tell by-and-by.

Vaginal fistulæ, when not due to cancerous ulceration, are always caused either by an acute laceration of the wall, or, what is much more frequent, by the continuous and long-sustained pressure of some neglected instrument, or of the foetal head in labour. The latter is by far the most frequent of all the causes; and the one fact that very few operations for vesico-vaginal fistulæ are paid for is sufficient to show that very many of these cases arise either from neglect on the part of the patient or of the patient's friends to procure efficient assistance at the labour, or from an inexcusable delay on the part of the accoucheur in assisting the natural efforts by instrumental interference. In some cases, however, a fistula seems inevitable, for every now and then we meet with a case where the labour has been comparatively short, yet where the separation of a slough leads to the establishment of a fistula. In the humbler class of patients, a great majority of the cases occur in primiparæ, and are unquestionably due to the patient's concealing, as long as possible, the fact that they are in labour, they being unmarried. One case, which I utterly failed to improve in any way, had the whole vagina

destroyed by sloughing, so that the rectum, ureters, and uterus opened into a common cloaca about two inches deep, with walls of cartilaginous hardness. In such cases the damage is nearly always very extensive, and very difficult to remedy. In married women, especially in multiparæ, the fistulæ are generally of a different stamp altogether, arising usually from pressure of the bladder between the fœtal head and the sharp angle of the symphysis pubis. The slough in these cases is seldom extensive, and is usually situated high up. The subsequent aperture looks as if it had been punched in the septum, and this is by far the most common form of vaginal fistula. Sometimes it is so high up that the aperture is within the cervix, constituting the variety of utero-vesical fistula. Such fistulæ are very difficult to remedy; and in one case where I assisted the late Sir James Simpson, he was obliged ultimately to close the cervix and allow the patient to menstruate through the bladder, a course which was found to be accompanied by no great disadvantage, whilst it had the very obvious recommendation that it most effectually prevented any recurrence of the cause of the fistula; yet, singularly enough, a case is narrated by Mr. J. R. Lane where a patient became pregnant after this operation had been accomplished, to all appearances with absolute completeness. Jobert de Lamballe's plan of slitting up the cervix in order to reach the opening—in other words, enlarging the fistula—will sometimes be found of great service. Cases of uretero-vaginal fistula have been mentioned, one case being notable as having occurred from the injury to the ureter by the needle used to close a utero-vesical fistula in the hands of Dr. Bozeman. The late Professor Simon, of Heidelberg, had a case, which I saw, where a ureteral fistula was left in the median wound after an ovariectomy, and which he cured by the bold and radical step of removing the kidney corresponding to the injured ureter. The case is narrated in his "*Chirurgie der Nieren*," Erlangen, 1871.

Urethro-vaginal fistulæ are rare, and, in my experience, are always the result of direct injury. In one notable case which has recently been under my care, a surgeon performed a somewhat eccentric lithotomy on a patient by slitting up her urinary tract from near the meatus urinarius as far as the cervix uteri, leaving only about a quarter of an inch of urethra intact. To close the large aperture as far forward as the neck of the bladder was an easy matter, and I succeeded at the first attempt; but to close the neck of the bladder and urethra required many repeated trials. I did not succeed until I made a false urethra to one side of the original canal, by passing a drainage-tube into the bladder, a process which was an original idea on my part, but which I find was proposed long ago by Baker Brown and others. This operation was perfectly successful, and the patient, after having spent nearly

ten years of her life on a bed-pan, can now retain ten or twelve ounces of urine. The case is detailed in the "Transactions of the Obstetrical Society of London" for 1876.

Recto-vaginal fistulæ are not very common unless of cancerous origin, only seven having come under my notice, and of these, two were the result of neglected pessaries. One seemed to have been the result of tertiary syphilitic disease, and was associated, as these fistulæ often are, with stricture of the rectum.

However caused, with the exception of the cancerous cases for which there is no cure, all fistulæ depend for their remedy upon very simple principles, in the carrying out of which, however, very considerable ingenuity is often required on the part of the surgeon. These are, that the edges of the fistulæ shall be carefully and smoothly made raw over the whole thickness of the wall, that the edges thus treated shall be carefully and accurately adapted, being secured by some material which shall not cut its way rapidly through the tissues, and that when the bladder is implicated the urine shall be allowed a free and constant exit until the wound is healed.

This may be done in one of two ways—either by the old-fashioned way of paring the edges, which is bad, or by the method first invented and described by Maurice Collis, of Dublin. This method was neglected and forgotten, and was re-invented by myself in 1881. The following extracts from Collis's paper (*Dublin Medical Journal* May 1861) will at once describe the details and emphasize the merits of the proceeding.

"The operation consists, first, in splitting the margin of the fistula all round, so as to separate the vesico-vaginal septum into two equal portions, one half consisting of the vaginal mucous membrane and submucous tissue, the muscular portion of the septum being equally divided between the two. The extent of this artificial separation is to be regulated by the extent of the fissure, by the condition of the margins, and, to a certain extent, by the position of the fissure. Where the fissure is near the vesical end of the urethra, or near the cervix uteri, the dissection need not be carried to any great depth.

"Anyone who has removed a ring of mucous membrane from ever so small a fistula will have observed how large it becomes under the process, and sooner or later will have probable cause to regret the loss of substance thus entailed; whereas, in my operation, if carefully done, no loss of material occurs; and even if it fail, it leaves the patient in no worse condition for subsequent treatment than before.

"In this operation we have a double prospect of success. It will be seen when the raw surfaces are drawn together by quilled sutures, that a ridge rises up on the vaginal surface between the quills. A similar and larger ridge is thrown up towards the bladder; this acts as a valve to prevent the water escaping, or

even coming in contact with the wound; and even if the parts included between the quills should slough, the flaps which point towards the bladder are exempt from the pressure of the quills and the strain of the sutures, so that they escape from sloughing and actually unite before the other flaps, and remain united, even if the latter give way.

"The operation is simple and requires no very complex armamentarium, and only the amount of dexterity which should be possessed by every surgeon deserving of the name, for it is not so much the implement as the hand that guides it that secures success, and all surgeons ought to be able to do their work with as few implements as possible.

"My operation is suitable to almost every case, and to many cases which could not be subjected to the older methods with the smallest chance of success.

"In a large gap, when the loss of substance is to be measured by square inches, no person could expect union by simply paring the edges and drawing them together by the interrupted suture. The strain on the threads would be too great, and they would inevitably cut out. Nor is the success of autoplasmic operations, by which flaps are transplanted from neighbouring parts, such as to lead us to expect much from them. In these cases it is of great importance to have a mode of operating which can be frequently repeated without repeated diminution of the already scanty material.

"In small gaps, on the other hand, it will not redound to the credit of the operator if the rent is made worse each time he interferes. Such a misfortune cannot happen by my operation in any case to which it is suited. There is no loss of substance; and the surgeon can begin again *de novo* in a few weeks with parts in at least as favourable a position as before."

It is very curious that this ingenious method is not to be found described in any of the text-books, for with one accord they describe the paring operation, the objection to which is that it removes tissue to a considerable extent where every atom may be of service. I have already said that operations for vaginal fistulæ are rarely paid for, except in gratitude, because the patients are nearly always poor. I must have operated on two or three hundred cases, and I have not yet been remunerated to an extent which would pay for the instruments I have bought for the purpose. I have thought it my duty to try every new instrument that seemed to have a reasonable prospect of advantage, and those which I have seen (but which I have not bought) for the purpose of curing vaginal fistulæ have often been most marvellous for complexity and misplaced ingenuity.

As I have grown in experience I have developed an increasing tendency to put all complicated instruments on the shelf. I still

go on buying many, but it is only to please their inventors and the instrument-makers. I think the only instruments wanted for operation on vaginal fistulæ are a Fergusson's glass-barrel speculum, a straight knife, and a curved-handled needle.

Hardly two vaginal fistulæ resemble each other so closely that a detailed description of the process of operation would exactly apply to both. I can do no more, therefore, than lay down the general principles that, when possible, I saw the flaps by splitting them, and always apply the sutures within the denuded surfaces. I have found it much easier to apply the stitches by the use of my finger-tips only, without speculum—a statement which will be found to be quite correct by anyone who will try it.

Upon the use of the catheter after operations for vesico-vaginal fistulæ opinions differ. I can only express my own as being strongly in favour of it, if used with proper care. But I have seen a careless nurse push a catheter so far in as to pass through the wound, and I have also seen a wound torn open by over-distension of the bladder some days even after the stitches had been removed. The safest and best catheter is the self-retaining convolvulus of the late Mr. W. D. Napier, having one of his movable balls run on outside, to prevent its being passed in too far. This instrument is one of the most ingenious surgical contrivances I have met with.

Recto-vaginal fistulæ require the rectum to be very carefully emptied by enemata every day, or even twice a day, after the operation, for any strain by engorgement will prove fatal to the success of the operation. Stitches should never be removed till the tenth or eleventh day, and even then this must be done with care. The injection of a little milk into the bladder or rectum will at once display any leakage. In cases where there is such destruction of tissue that no hope can be entertained of repairing the organs by the ordinary method, closure of the vagina may yield some amount of comfort to the patient, especially if the defect be in the recto-vaginal septum. It is, however, but a clumsy expedient, and every other plan which ingenuity can suggest should be tried before recourse is had to it, for, according to my experience, the rectum will not bear for a long time the irritation produced by the decomposing mixture of urine and fœces.

I have lately succeeded in curing a recto-vaginal fistula of a very inveterate kind by first of all divesting the fœces by a lumbar colotomy.

Sometimes recto-vaginal fistulæ are met with as the result of a tearing of the septum during labour. These are always small in size, and situated just within the sphincter. They are troublesome to cure, and the easiest way to deal with them is to make the opening free by dividing the perinaeum up to it, and dealing with the case for perineorrhaphy.

Malformations of the vagina are brought under our notice chiefly at three periods of life—during infancy, at puberty, and at the time of marriage. Those seen in early life are chiefly such as are confined to the vestibule, though occasionally a case of atresia is brought to us in an infant. In such a case, the advice always to be given is to wait till puberty, for before that time nothing can be done with safety or advantage; and it must be borne in mind that until that time no exact decision can be arrived at as to whether the case is one of mere closure of the canal or of congenital absence of the more essential organs.

At the time of puberty, or more usually at the age of sixteen or seventeen, the cases of malformation brought to us are nearly all those in which the internal organs are normal, but where there is some hindrance to the escape of the menstrual fluid. In these cases attention is usually attracted by the extreme pain the patient suffers at the monthly intervals, without any corresponding external appearances; but sometimes even this is not sufficient to induce the parents to seek special advice, and the poor child may have to endure her miseries for a year or two until the discovery of an abdominal tumour thoroughly alarms them. It will hardly appear credible, but I have operated for hæmatokolpos upon a girl aged eighteen years, who had suffered from all the symptoms of atresia for two years, had been admitted twice into a large hospital, and dismissed each time with her condition unrelieved, because she never was examined. The monthly pain in these cases is sometimes very terrible, as indeed may be well appreciated if we bear in mind the great expulsive power of the uterus, which seems under such circumstances to be overcome by the force of a hydraulic apparatus still more powerful. The menstrual fluid is poured into the uterus and vagina, if that be not wholly obliterated, and distends them in spite of the powerful muscular walls. During the inter-menstrual periods, the more fluid parts of the blood seem to be absorbed, leaving behind a characteristic treacly fluid which distends the cavity. This increases in quantity every month, and may go on till the uterus approaches the size it has in the fifth or sixth month of pregnancy. If no menstrual flow has ever appeared, if there has been the constantly repeated monthly pain, and at the same time there is evident imperfection in the vaginal canal, the diagnosis is clear. But in some rare instances, as in one published by me in the *Lancet* for 1876, there may be a kind of menstruation going on at the same time, which greatly complicates the diagnosis, in a way to be afterwards described when I refer to the malformations of the uterus. The degree and kind of the atresia may vary very greatly, so as not only to make the diagnosis difficult, but to make it far from easy to decide what the treatment shall be. When merely the hymen or a narrow zone of the vagina is affected, so that the tumour can be felt by the finger in the rectum

coming low down towards the site of the obstruction, an operation is very easy. But when the atresia amounts practically to an absence of the vagina, so that a sound in the urethra can be felt in the rectum, as if there was only a single layer of membrane between them, operative measures are difficult, risky, and by no means certain to give permanent relief. One such case was sent to me from Wales, and the tumour seemed so high up that it would be impossible to reach it safely between the urethra and rectum. I therefore opened it in the rectum, and for three years the result was satisfactory. But ultimately the distended uterus suppurated because the fistula into the rectum could not be kept open, and the patient died after long suffering. Such a case now I should treat by the removal of the uterine appendages; I should not open the hæmatocolpos at all. In another case from Herefordshire, placed under my care by my friend Mr. Shirley Palmer, where the tumour was not quite so high up, where there was no trace of a vagina, I performed a very careful and elaborate dissection for about three inches upwards, having one finger in the rectum and a sound in the bladder; but although the patient made a complete recovery, the difficulty of keeping the passage open was so great, the pain of wearing instruments for the purpose was so unendurable, and the likelihood of any such artificial opening ever being capable of use as a vagina is so small, that I may regard the operation as a failure. If the site of the occlusion extends upwards more than two inches, I should always advise that the uterine appendages should be removed.

In the performance of these operations, the question has been much debated whether the aperture into the cavity containing the menstrual fluid should be free, so as to admit of rapid and complete evacuation, or whether the fluid should be drawn off gradually by the aspirator. I find fatal results recorded in the case of both of these plans. I have used them both, and have not lost a case out of ten operations, in six of which the fluid was allowed free exit, in the other four the aspirator having been used at intervals, and the incision made only after the tumour had been considerably reduced. Such good fortune, however, does by no means always follow the treatment of these cases. Death appears to be the result of a septic metro-peritonitis, induced probably by the decomposition of the fluid. To prevent this I always have the cavity frequently injected with clove-water. After recovery from the operation, it is always necessary for the patient to wear some apparatus to keep the passage open, and the ultimate results of the operations are far from satisfactory.

Besides these cases of congenital atresia, we meet occasionally with an acquired occlusion, the result generally of sloughing after labour. Such cases vary very greatly according to the damage done, but the principles governing their treatment do not differ

from those required by the congenital cases further than that it must be very rarely the case that it will be necessary to make an opening into the uterus from the rectum. Much care must also be exercised in order to be sure that the enlarging uterus is not occupied by a pregnancy instead of retained menstrual fluid; and until the time has arrived when fetal sounds ought to be heard, it is not easy to point out how the differential diagnosis may be made.

Young women about to marry, or who may have been married for some time, occasionally apply to us for some malformation of the genitals, which is discovered to be absence of the vagina without any of the symptoms of retained menstrual fluid. In these cases, the deformity is accompanied by a deficiency, or, it may be, a total want of development of the internal organs. I have seen one dissecting-room specimen, and, curiously enough, it was in the body of a prostitute, where there was a canal about two-thirds of an inch long, but capable of extension inwards to about three inches, by an indrawing of the neighbouring skin, but in which there was not a trace of uterus or ovaries. In hospital practice, two cases have come under my care of young married women in whom the same conditions of the external organs were observed, and in whom, so far as a most careful examination under anæsthetics could determine, an equal deficiency of the internal organs existed. With one of those striking coincidences which are met with so often in surgical practice, these two young women presented themselves the same day, were examined at the same visit, took both the same satisfied view of their cases—that it was a relief to know they would have no children. They have since remained firm friends, for I often pass them walking together in the streets. Both declared that they suffered no kind of inconvenience from their defect and that their husbands seemed perfectly satisfied.

In another case where I had to operate for chronic suppurating peritonitis, I had previously discovered by vaginal examination that there were no indications of uterus and appendages. At the operation I found that this absolutely was so, by the bi-manual method, my left-hand being inside the pelvis. Contrary to the general statement that in complete congenital absence of the uterus and appendages there is no hair on the pubes, this woman's pubis was exceptionally well covered.

I have met with several cases where the vagina was abnormally short, and where the cervix seemed to be just within the vulva. These cases do not seem to present any difficulties, either in their marital relations or in child-bearing. They do seem apt, however, to suffer from protrusions, and when this is the case there is usually much difficulty in fitting them with efficient supports.

Cases of congenital narrowing of the vagina to such an extent as to interfere with marital intercourse are not common, but they

are sufficiently so for nearly every writer on these subjects to be able to detail one. I have met with one case of a woman who had been married nearly twenty years, and in whom the vagina was only sufficiently wide to admit a number 9 catheter. She menstruated regularly, and a normally large uterus could be felt in the rectum. Intercourse took place only at long intervals, and for three or four days after it she was always quite unable to hold her water. The urethra was wide and flabby, and I have no doubt, from the appearances of the parts, that the urethra was penetrated by the penis in coition. In such cases, slow and gradual dilatation of the vagina, by means of glass or ebonite pessaries, might after prolonged use be productive of good.

A few cases are on record of double vagina, but of this malformation I have seen only two instances. It must be, of course, an extension downwards of the septum of a double uterus, and therefore an arrest of development, or reversion to a type of organ seen in earlier animals. The proper proceeding in such a case would be to divide the septum as high up as the lips of the os uteri.

In one of the cases of this malformation which I saw, the ridiculous incident occurred of the practitioner examining for a presentation up one vagina, whilst the baby was slowly coming down the other.

URETHRA.

The urethra is always more or less involved in any acute vaginal inflammation, and in gonorrhœa it is the urethritis which causes most distress. To relieve this, there is no application so good as a morphia pessary. After the acute stage of the gonorrhœa has passed off, a chronic urethritis is often left, which becomes very distressing to the patient; but it is very easily cured by the application of equal parts of carbolic acid and glycerine on a probe armed with cotton wool. The various forms of dilatation of the urethra, and of its other diseases, have already been described in speaking of the meatus urinarius and of vaginal prolapses.

Only one other condition need be referred to here; and though the causes which produce it are not always resident in the urethra, yet its most convenient position is in this chapter. I refer to enuresis, or incontinence of urine. Cases of this affection fall into two categories: those in which there is constant dribbling of the urine, and those in which it is retained for a time, but discharged at intervals involuntarily. In the first variety, the condition will almost always be found to depend upon some central disease of the nervous system, or upon some previous injury to the urethra, or to be the mere expression of an over-distended bladder. In cases where there is central disease, the symptom falls under the notice

of the gynecologist only when it is desired that some mechanical contrivance should be made use of for the purpose of mitigating the inconvenience. I have strong objections to the use of any kind of apparatus for compressing the urethra, and have always advised the use of the ordinary pouch urinal, unless the patient be bed-ridden, when Mr. Napier's catheters will be found extremely useful, and quite free from risk. When the incontinence is due to mechanical injury, of course excluding fistulæ, the source of that injury will generally be found to have been the introduction of some foreign body into the urethra. I know of an instance where permanent incontinence resulted from the presence of the handle of a parasol in the urethra for some months, and I have already referred to a case where it was caused temporarily by the use of the urethra as a vagina. I have seen cases of permanent incontinence resulting from the dilatation of the urethra for the purpose of examining or removing foreign substances from the bladder. The custom of dilating the urethra for these purposes, introduced chiefly by Simon, is by no means free from the risk spoken of, however carefully it may be done. I have seen three instances of this result, one of which unfortunately occurred in my own practice. I am by no means sure that an aperture made in the neck of the bladder and closed immediately is not much better and safer practice, for it will always be possible to secure its closure. How to cure incontinence after dilatation of the urethra I do not know, every effort having failed in my hands. One expedient which I have several times tried was suggested to me by Sir Spencer Wells—that of applying a cautery to the site of the sphincter—but it failed completely.

In some few cases, dribbling is the result of over-distension of the bladder, just as it often is in men. An instance of this kind came under my care lately, the patient being a young lady of twenty-two years of age. A sample of urine, which had been brought to me by the patient, having a specific gravity of only 1005, I immediately suspected that she was malingering, and that she had diluted her urine, for she had no complaint to make save the distress caused by the dribbling. Placing her on the couch in my consulting-room, I saw the urine issuing from the meatus, and in order to collect some I passed a catheter into the bladder. Much to my surprise, I drew off about thirty ounces of limpid urine, having exactly the same character as the specimen she brought. She was instructed how to pass the catheter, and to use it every four or five hours, and in this way she maintains a tolerably comfortable existence.

Occasional incontinence of urine is most frequently met with in children before puberty, and is, in the vast majority of instances merely a bad habit. They prefer to sleep rather than rise to micturate. They should never be punished for it, otherwise than

by some moral influence, and it is always best corrected by careful attention to their early rising. In many instances it is, however, a physical infirmity, often accompanied by defective intellect. In these cases it may be retained beyond puberty, and prove incurable throughout life. Pregnant women, and women who have borne a large number of children, are subject to occasional incontinence; and I have often found them completely relieved by the use of an ebonite vaginal ball, such as I have already described.

I have nothing to say about the bed-wetting of children except that I know nothing, either in the way of surgical or medical treatment, which does it any good. Punishment is equally useless, and the children always grow out of it, unless they are idiotic.

The bladder is subject to two forms of ulceration of a non-malignant character, the first of which is by far the more common. It consists in the destruction of the mucous membrane in patches, which vary greatly in size and shape, but which are usually situated at the base of the bladder. It is always associated with chronic cystitis, the urine being ropy, purulent, albuminous and ammoniacal, the bladder very tender on pressure and incapable of enduring distention. For the relief of the pain the use of pessaries containing morphia or extract of belladonna will be found very useful, but a cure can be effected only by the introduction of remedies into the bladder. By far the best of these are carbolic acid and neutral acetate of lead. The former should be used in the form of injections of a two per cent. solution night and morning, until the urine has lost its ammoniacal character, and then the acetate of lead should be very perseveringly employed. Sometimes more potent astringents are required, as nitrate of silver; but these should be used very cautiously. In many cases, the cystitis and ulceration depend upon mischief higher up, as pyelitis, and then they fall more properly under the category of diseases of the kidney.

The other form of ulcer is very rare, and may be described best under the term of the chronic perforating ulcer. In anatomical characters as well as in semeiology, it closely resembles the perforating ulcer of the stomach; and Rokitansky tells us that, as in the latter organ so in the bladder, one of the methods of its fatal issue is by complete perforation, causing general peritonitis. It seems to occur most frequently at the neck of the bladder, and gives rise to agonising pain at this part, which is seldom absent save when the patient is under the influence of some narcotic. During micturition the pain is intensified; but a few minutes of comparative ease are usually obtained after the bladder is emptied, and until the urine again begins to distend it. The symptoms at once remove the possibility of mistaking the disease for stone, and the comparative absence of abnormal products in the urine, except

blood, make it easy to distinguish it from the other form of ulceration.

The only cure for this disease is one devised by the late Sir James Simpson, and first described by myself, as having been witnessed in his practice, in the *Lancet* for November, 1870. It is to establish a vesico-vaginal fistula, and by keeping it open for some months to give the bladder perfect rest.

The same object has been accomplished in another way in the case of a lady from Derbyshire, who came to me ten years ago, suffering from spanæmia, associated with intense albuminuria, and from bladder symptoms. She had been condemned as the victim of Bright's disease, but the bladder symptoms induced me to dilate the urethra and search for a perforating ulcer. This I found at the upper and back part of the bladder. The dilatation of the urethra resulted in dribbling, and the rest thus obtained for the bladder is enabling the ulcer slowly to heal. The blood has entirely disappeared from the urine, and pus is only found; and I hope in time that a perfect cure will be accomplished. Sir James Sawyer saw the case with me, and at first we both feared that the ulcer was cancerous.

There is another disease of the bladder of rare occurrence and, so far as I can find, hitherto quite undescribed. I venture to give it the name of atrophic contraction of the bladder, because the change, whatever it may really be, brings the retaining capacity of the bladder down to an ounce or an ounce and a half. The result is that the patient is in misery from constant micturition. In despair I have explored the bladder in two or three of these cases, only to find that I could do nothing.

Sloughing of the entire mucous coat of the bladder is a well-established, but fortunately rare, accident from over-distension of the bladder after labour. I have twice been called in consultation in cases of dribbling of urine after labour, to find it due to the bladder being over-distended, far above the umbilicus, in which condition it had been for days, the unhappy practitioners having failed to recognise the fact. In one of these cases the whole mucous coat sloughed and was discharged by the urethra, a few hours before the patient died.

Stone in the bladder is much less common in women than in men, for obvious anatomical reasons, and the symptoms it gives rise to in women are rarely so severe as those suffered by the other sex. Into the nature and characters of the various kinds of calculi met with in women it is hardly my province here to enter. According to my own experience, the smooth uric acid calculus is by far the most common when the stone is not due to the presence of a foreign body; when the concretion is formed round a nucleus it is always phosphatic. The diagnosis of the disease is very easy, for unless the stone be very small, or the

bladder walls very thick, it may always be felt from the vagina. The symptom which most conclusively points to the presence of a stone in the bladder is the pain and straining after the viscus has been emptied, and if this is persistent, the bladder should be carefully explored by one of Napier's lead sounds. For the removal of the stone the urethra may be dilated—occasionally a risky proceeding; and it will always be better to break the stone up by the lithotrite if it be more than fifteen millimetres in diameter.

But it will be found very often—indeed, I am sure in by far the great majority of cases—that stone in the bladder in women is due to the introduction into the bladder of a foreign body—very often a hair-pin. I have removed hair-pins encrusted with phosphates from ten different female bladders, and not one of the owners of these bladders would give any account of the incident. Lithotomy in women is such an easy and safe proceeding that it may always be proceeded with if the lithotrite will not close, showing that there is a foreign body. The wound should be immediately closed by stitches. I once had to do supra-pubic lithotomy on a woman in whom I had constructed a new bladder from the ruins left by an awful confinement. A calculus was formed in my new construction, and I dare not cut from the vagina lest I should fail to close the wound. I therefore cut from above, with a most perfect result.

Polypus of the bladder is a very rare disease, and only one case has come under my notice. I felt a thickening in the anterior wall of the vagina; and having dilated the urethra, I discovered a small pediculated tumour just within the neck of the bladder. I removed it by evulsion with a pair of forceps, and found it to be a myomatous polypus, similar exactly to those met with so often in the uterus. She had no more hæmaturia, and rapidly recovered.

Cancer in the bladder is generally secondary, extending from the uterus, and in that case it is generally ulcerating epithelioma. This form, however, occasionally arises in the bladder primarily, as I have lately seen in an old lady nearly seventy years of age. Villous cancer is a much rarer form of epithelioma, but it occurs more frequently in the bladder than in the intestines, its only other seat. I have never seen a case of it, and therefore think it well to give the following extract from an admirable description of the disease as seen in the bladder of a male, by my friend Mr. Joseph Bell, of Edinburgh, and published by him in the *Edinburgh Medical Journal* for 1864:—"About seven-eighths of the mucous surface were coated with a soft villous growth like the pile of very loose velvet, the processes growing directly from the mucous membrane itself, and connected by pedicles. The villi were in some instances branched or had club-shaped

processes, and they were occupied by small, transparent, and closely-packed cells, which also infiltrated the adjacent mucous membrane." This disease stands to the other form of epithelioma of the bladder in exactly the same relation as the cauliflower growth of the cervix does to the excavating form of cancer.

Cases are on record where the bladder has been congenitally absent, the ureters opening directly into the urethra or into the rectum; but the more common condition is where the cavity not having been closed in front, no bladder is really formed, and there is only an extroversion of the posterior parietes and trigone, with the ureters, like two papillæ, on the red fungous-looking mass. This deformity is, in females, less seldom accompanied by other malformations than it is in males. In the latter, it necessarily involves the absence of procreative power; but not so in women, as some have been mothers who were thus deformed. The ingenuity of some modern surgeons, especially Professor John Wood, of King's College, London, and the late Gustav Simon, of Heidelberg, has enabled us to mitigate the inconvenience which this malformation gives rise to. The plastic operations devised for the purpose will be found described in the writings of these two surgeons, but they are hardly within the province of this work, and I have had no personal experience of them. Like most other plastic operations of a similar nature, as those on the nose, the results after the lapse of a few years are not worth the trouble involved.

I have met with two very curious cases which I desire to place on record here, having much difficulty in putting them in any special category. They were characterised by one symptom only—that of a most extraordinary discharge of clear fluid from the vagina, in quantities which were perfectly astounding.

The first was in a lady of over sixty years of age, extremely stout, and of a marked gouty habit, in whom these attacks had occurred for more than thirty years, and for the treatment of which she had been under the care of a large number of practitioners without any benefit. For a few weeks she would be perfectly free from any discharge, then, to her extreme discomfort, a quantity of clear fluid would be discharged from the vagina, which not only saturated everything that she wore, but literally flowed round the floor from the spot on which she was sitting, so that she and her attendants would estimate that some two or three gallons would be lost at a sitting. In every other respect she was in perfect health.

Various opinions had been given as to the origin of the hydrorrhœa. The general opinion was that it came from the uterus; some expressed an opinion that it was an instance of excessive polyuria. When she came under my care first, some six or seven years ago, my first effort was to establish exactly the origin of the

discharge, and, by a simple arrangement of specula secured in the vagina, I speedily discovered that it proceeded neither from the uterus nor the bladder, but from two small apertures, one on each side of the urethra, which were doubtless remains of Gartner's canals. I destroyed these apertures by the application of Pacquelin's cautery, and for a while I arrested the discharge; but after a time the distress of the patient was so great that it was evident that she would suffer seriously unless the discharges were again established, and this they were by the bursting of the canals. I tried more than once the wisdom of closing them, but they re-opened, after a continuance of the feeling of distress for some days.

I found, on searching into the literature of these canals, that Schuller and Hocks had recorded instances of the persistence of the ducts in women, but that these instances had been discovered by accident, and had no pathological importance. Morison Watson has also described similar cases in the *Journal of Anatomy and Physiology*, but it appeared to him from the description given that all the cases I have just alluded to have a direct communication with the cavity of the peritoneum, and that the fluid was probably the serum of that cavity. The conclusion was substantiated by the fact that on analysis it was found to contain a small quantity of albumen, chloride of sodium and salts of potash, and was entirely free from any trace of urea.

If the patient had been younger I should have submitted her to an abdominal section, for the purpose of closing the ducts by destroying the broad ligaments, but at her age, and with her constitution, such a proceeding was out of the question, and the poor old dame, at the age of more than seventy, still continues in her miserable condition.

The second case was in the person of a young married lady, aged twenty-eight, who was sent to me by Dr. Roberts, of Chester, in 1884. When I saw her first, in March of that year, I agreed with Dr. Roberts that it was a case of hydrosalpinx, where the fluid accumulated to a large quantity and then discharged itself through the uterus. When I saw her there was a distinct mass in the pelvis, and a sense of dulness on percussion of the lower part of the abdomen, which gave me the impression that a flaccid half-emptied cyst was present, and therefore I advised abdominal section. I prepared the patient for the contingency of such an operation involving both sides, but as she already had as many children as she cared for she had no desire to run the risk of failure by leaving one side if I found both implicated. On opening the abdomen, to my surprise, I found no dilated tube, but both ovaries greatly enlarged—together, they subsequently weighed a little over a thousand grains. I looked all over the broad ligaments very carefully, to see if I could discover any trace of a

dilated Gartner's canal, but could not. Dr. Roberts fully concurred, and, seeing nothing else to do, I removed both sets of uterine appendages as close to the uterus as I could tie them. She made a very easy recovery, and went home, remained quite well till the middle of May, and, to my disappointment, I then got a letter from Dr. Roberts, to the effect that the discharge had re-appeared on the 13th, but not quite so profuse, and attended with as much, if not more, bearing-down pains. "It is," he added, "a most puzzling case."

The last that I heard of the patient was that she had passed a small renal calculus, but I do not in the least degree associate this incident with the quantities of fluid which passed from her vagina. The fluid, to my certain knowledge, was not in the least degree of a renal character, and did not come from the bladder. I have had several communications from her since, in which she has expressed herself enormously benefited by the arrest of menstruation. In her last letter she says, "You would hardly recognize me, I am now so well and strong," and all appearances of the hydrorrhœa have long since ceased.

In this case the origin of the fluid is still unascertained, but I am quite disposed to regard it from its features as resembling the other. It is perfectly certain, however, that I did not succeed in discovering the orifice in Gartner's canals in the second case, but I am quite convinced that the cure arrived at originated in the destruction of the broad ligaments, and the removal of the uterine appendages.

IV.

UTERUS.

Os Externum.—Any acute inflammatory affection of the vagina may, and too frequently does, extend to the uterus; and long after catarrhal or gonorrhœal vaginitis has ceased, we may find remains of it within the uterus. When seen still in the acute stage, the lips are swollen, red and vascular, bleeding readily on touch, and the inner mucous surface is everted, and of a darker hue than the outer. The lips may also be dotted with pustules, which are the mucous crypts in a state of suppuration. This state of matters, if neglected, will last a long time, and the profuse purulent discharge which arises from it is a fruitful source of gonorrhœa in men. It is also a certain cause of sterility in the sufferers. I have repeatedly seen young women who have been sterile for three or four years after marriage, become pregnant immediately after such a condition was cured. Inflammation of this kind is usually confined to the os and cervix; for even in the most acute gonorrhœa the body of the uterus seems to have great powers of resistance, and, save from septic or traumatic causes, acute general metritis is very rare. But the specific inflammation spreads easily along the epithelial surface, and, as will be seen when I come to speak of the diseases of the Fallopian tubes, gonorrhœal disease of the genital canals of women is so inveterate that there is good reason to believe it is never cured in the majority of instances. If seen in the primary acute stage, the patient must be kept perfectly quiet in bed, and injections should on no account be used. Pessaries containing acetate of lead and opium are by far the safest local applications, for by them no risk is run of driving the infecting discharge into the cavity of the uterus. They have, besides, the advantage of securing a continuous application of the remedy, which injections do not. In the sub-acute stage, I have found no remedy so good as a saturated solution of acetate of lead in glycerine, accurately applied on a plug of cotton wool, and nothing is so unsuitable as that favourite remedy, solid nitrate of silver. Armed with the caustic stick, the inexperienced practitioner is apt to think he can cope with all uterine maladies; and very numerous are the cases in which I have seen irretrievable mischief done by this potent remedy. I have seen a very simple chronic inflammation transformed into a serious acute traumatic form by the injudicious use of nitrate of silver; and over and over again I have had to re-open

the uterine canal when it had been occluded by repeated applications. It is constantly forgotten that solid nitrate of silver is an escharotic, and that every time it is applied a process of sloughing, followed by cicatricial contraction, is induced. Nitrate of silver, having become a popular remedy, has, in inexperienced hands, been productive of far more harm than benefit.

There is a form of chronic granular inflammation of the inner mucous surface of the os which is one of the most common diseases from which women suffer, and which usually goes by the name of "ulceration of the womb," though there is no ulceration at all in nine hundred and ninety-nine cases out of a thousand. The disease arises in very many different ways, some of which are tangible enough, but in the majority of cases no explanation of its occurrence can be obtained. It is very often a sequela of the first labour, or indeed of any labour or miscarriage, but it is also very common in nulliparous and in virgin women. It is characterized by obscure pains in the groin and back, somewhat profuse menstruation, followed by a profuse thin whitish or yellow discharge, which diminishes in quantity to a marked extent, or even may wholly disappear, before the next period. If the os be inspected, its vaginal mucous surface will be found normal; but just at the marginal line the inner mucous surface will be found everted, raised above the surface, of a bright pink colour, and bathed in a purulent discharge. If this discharge be seen to well out of the cervix, then a more serious state of matters exists. This chronic granular inflammation is almost uniformly set down by the inexperienced eye as ulceration, and is far too often subjected to the heroic treatment which is traditionally associated with that word. It needs no such violent treatment. A simple astringent lotion of sulphate of zinc or of alum will, in the majority of cases, speedily cure it. If it does not yield to that, it should be, in addition, touched once a fortnight with carbolic acid, or have the glycerine of lead applied twice a week. None of these remedies will do any harm, whilst the repeated application of an escharotic always does, especially if the mischief is not quite confined to the os.

When these cases have followed a bad labour, especially when, from various reasons, the process of involution has been incomplete, it is not unusual to see a "laceration" of the cervix on one or other side, sometimes on both. A well-known American gynecologist has conceived the idea that this rent is the cause of all the mischief, instead of being a mere incident which is not of the slightest consequence in itself. A great flood of operations has in consequence gone through the practice of gynecology of recent years for the stitching up of this innocent fissure. The real trouble is the sub-involution and the consequent chronic metritis, as we shall see by-and-by, and nothing

more useless than "Emmett's operation" has ever been introduced into surgical practice.

Follicular suppuration is indicated by small punctate patches on the everted lips of the os, of a yellow colour, resembling small pustules. This disease seems to be an extension of the chronic granular inflammation to the suppurative stage. It is very obstinate and very apt to recur, so that considerable perseverance is often wanted to effect a cure. By far the best application is the glycerine of lead, applied twice a week on a cotton-wool plug.

The os uteri is occasionally the seat of a primary syphilitic sore, and it is not always easy to detect it. Usually, however, the excavation is so deep, its purplish hue so decided, and the induration of its edges so well marked, that no doubt can be entertained as to its character. Exceptionally, the nature of the ulcer is not displayed till the onset of the constitutional symptoms. When discovered, there can be no doubt as to the propriety of destroying the ulcer, and of at once placing the patient on a course of iodide of potassium or of mercury.

There is besides a well-marked form of syphilitic ulceration of the os uteri, accompanied by interstitial induration, which belongs to the secondary, or perhaps even tertiary stages of this disease. It is not common; and in all the instances I have seen it was at first mistaken, either by myself or others, for the early stage of malignant disease. It differs from cancer chiefly in the comparative absence of pain, the purulent character of the discharge, and the clear history of syphilis. In one case now under my care it had advanced so far that the complete diagnosis was possible only after the improvement obtained by mercury. In this disease the process seems identical with a similar condition met with in the tongue. Both organs are liable to epithelioma and to gummatous disease; and in the early stage of any doubtful case, even where no history of syphilis can be obtained, a prolonged mercurial course should be tried before any absolute opinion as to the malignancy of the disease is given. Early in practice I received a memorable lesson on this subject, which has since kept constantly before me the possibility of condemning a syphilitic patient to death under the erroneous belief that her disease was cancer. The case was one, to all appearance, of epithelioma having destroyed the posterior lip of the uterus, and eaten a hole through the septum into the bowel. A more experienced practitioner recognized the possibility of the disease being syphilitic, and cured the patient completely.

The rarest of all the diseases which affect the uterus is a form of ulceration which is undoubtedly tubercular. I have seen only three cases, and all three only once. The last instance

which came under my notice was in a woman sent to me by my friend Mr. Harries, of Shrewsbury, under whose care she had been for two years, and who had completely exhausted the round of therapeutics in his efforts to benefit her. The uterus was large and hard, but perfectly movable. The cervix was widely open, ragged, and had a greyish-yellow colour all over, and gave exit to a profuse unhealthy yellow discharge. The appearance of the cervix was not altered after being cleaned, and it did not bleed on being touched. The disease had seemed to be stationary for some months, but the patient was getting much thinner, and I could discover no trace of tubercular disease elsewhere. I think that this disease might perhaps yield to the heroic application of caustic, but I have as yet had no opportunity of trying it. The clear indications for treatment are those of general tubercular disease; but the general prognosis, so far as I can discover from the few authors who mention this affection, is not favourable.

To avoid needless repetition, I shall defer the discussion of of epithelioma till I treat of diseases of the cervix.

I have met with one case of congenital absence of the os uteri—that is, where atresia of the genital canal existed by the agglutination of the lips of the uterus. The defect was not discovered till the girl suffered from the symptoms of hæmatokolpos, and it was completely relieved by free crucial incision. The patient was perfectly virginal, so that there was every reason to believe the closure to have been the result of some error in development.

Stricture of the external os, with “conical cervix,” is one of the characters of “infantile uterus,” though it may be met with in a fully-developed uterus, and as a cause of “obstructive dysmenorrhœa” and sterility.

Sometimes the cervix is elongated, and at its extremity the aperture may be found only with some difficulty. This condition seems often to cause chronic endometritis, due apparently to the hindrance to the exit of the uterine discharges. The proper treatment is to slit the cervix on each side up to the vaginal insertion by scissors, and to insert a glass stem pessary to prevent the re-union of the cut surfaces. The endometritis must, if it does not get well after the cure of the stricture, be treated as will be afterwards described. Of all the mechanical causes of sterility this is the most satisfactory to treat, because in a large number of cases the patients become pregnant soon after the operation.

Most of the cases of closure by cicatricial contraction which I have seen have been due to the heroic use of caustics, a fashion which was brought in by the last generation of gynæcologists, which still rages amongst practitioners of limited experience, and

which produces, as I have already said, a great deal of mischief. Nobody would dream of subjecting any other mucous orifice to such violent treatment as many are in the habit of daily applying to the os uteri. Similar occlusion is occasionally due to sloughing after labour. It may generally be cured by an incision, followed by the prolonged use of an ebonite stem pessary. I have met with a case lately in which the patient complained of the greatest distress during intercourse if intromission was complete. On the most careful examination of the os, both by myself and others, no abnormal condition could be discovered, but the most acute pain was caused by any pressure on the lips of the uterus. We could only call the disease hyperæsthesia, and it has been completely cured by a liberal application of the actual cautery to the lips, avoiding the cervical canal.

Cervix.—Acute inflammation extending to the cervix is almost always either of gonorrhœal or septic origin, or it may occasionally occur from a traumatic cause, such as a surgical operation on the organ. Acute gonorrhœal cervicitis, or endo-cervicitis, may be suspected when, in addition to the characteristic appearances of gonorrhœa already described, the patient complains of supra-pubic pain, and if, on examination by the speculum, a copious discharge seems to issue from the os. Such a condition is full of anxiety, for the disease may spread up the uterus and along the tubes to the ovaries. The patient must be kept rigidly in bed, and be treated by soluble pessaries of acetate of lead and opium, and general antiphlogistic remedies. On no consideration whatever should injections be employed in such a case, on account of the accidents which are described at greater length in the chapter on inflammation of the ovaries.

Acute septic cervicitis, associated of course with general metritis, will be spoken of in another chapter. Traumatic cervicitis often occurs after operations on the cervix, such as division of strictures, amputation of a part of a hypertrophied organ, but more especially after the use of the sponge and sea-tangle tents. It must always be borne in mind that the use of these appliances is accompanied by a very great risk; so great, indeed, have I found it, that for many years I have given up the use of all other means for dilating the uterus than the method of continuous elastic pressure by means of the conical dilators, of which I may here conveniently give a description.

The idea of employing continuous elastic pressure for dilating the uterus arose out of the success that I had in driving back an inverted uterus by the same method. I had long been dissatisfied with the risky methods of dilating previously in use by means of sponge and other tents; it never was very effectual, and always dangerous, on account of the decomposition

of the sponge or the violent and uncontrollable force exercised by the sea-tangle or tupelo-wood. The methods employed for dilatation by Hegar and others, by the use of the graduated ebonite stems, seems to me just as dangerous as the use of the tangle tent, and certainly is a piece of work so arduous for the surgeon that I for one could not find time to use it. It means that the operator must sit at the bed-side for some hours, exercising a good deal of force, to the exhaustion of himself, as well as to the infliction of much pain on the patient. My method of continuous elastic dilatation of the uterus involves no trouble to the surgeon, and neither pain nor risk to the patient, and it ought to have for her no pain. A waist-

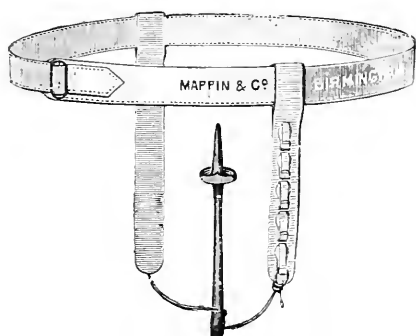


FIG. 11.—Tait's Uterine Dilator.

belt is buckled round the patient, to which two tags of about six inches long are fastened fore and aft, and upon these are a series of hooks by which the tension of the elastic threads may be varied. The instrument itself consists of a straight stem; and I may say here, as I have said before, that I prefer all my instruments to be straight, so that I easily can tell in what direction they are going. The moment a curve is introduced, unless that curve is exposed to the eye, it is difficult to correctly appreciate where it is extending its influence. At one end of the stem there is a screw collar, and at the other there are three holes in which are fastened the elastic threads by which pressure is caused. To the screw collar are fixed in their turns two, three, or four plugs, varying in size, so that

the point of No. 2 is a section of the middle of No. 1, and correspondingly the point of No. 3 is a section of the middle of No. 2. No. 1 plug is pointed, and is supplied with a collar, so that it may not pass into the uterus to a dangerous extent; and at one point this collar is cut off that the finger may pass beyond it in order that the operator may appreciate the amount and rate of dilatation. No. 1 plug having been screwed on the shaft, the point is placed within the cervix, and the elastic threads fastened upon the hooks, so as to secure the retention of the plug firmly within the cervix, but not to give pain. The nurse is then directed to tighten the threads by raising them two or three hooks at the end of a few hours, caution always being given that the patient is not to be hurt. If sufficient pressure is used for dilatation, and not more than that, the process can be carried on from beginning to end without any suffering at all, and under such circumstances it usually occupies a period of from twenty-four to thirty-six hours. But dilatation may be made completely

in six hours, if there is need for it, and the pain may easily be subdued by a hypodermic injection of morphia. No. 1 plug is first driven in up to its collar, then removed, and No. 2 takes its place, and is in turn driven in up to its base, and then No. 3, if necessary. The only precaution beyond those already mentioned which is required is that, however temptingly open the cervix may feel, the use of No. 1 plug is never to be dispensed with, for by its use alone can the operator be perfectly certain that the second will enter the uterus properly. For most operative purposes I find No. 2 plug gives all the dilatation that is wanted; but if it is necessary to explore the uterus by the finger, then No. 3 has to be employed. For many purposes, such as relief of stricture, straightening of the uterus in bad cases of flexion, and for induction of premature labour, this instrument is of incalculable value, and has now in my hands entirely superseded

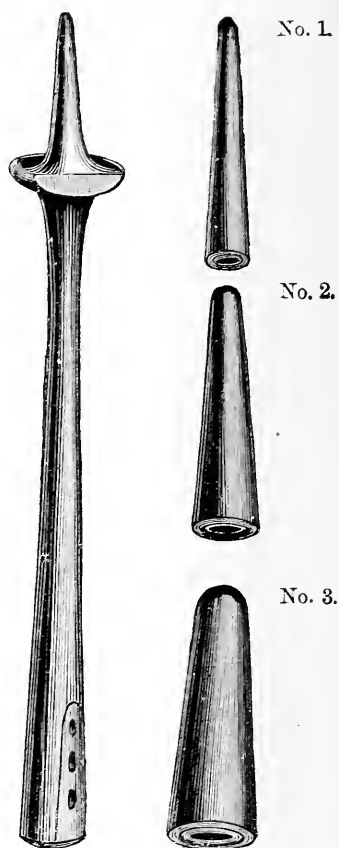


FIG. 12.

every other method of dilating the uterine cavity. It is so absolutely free from risk that I can now speak of many hundreds of cases in which I have employed it without ever in a single instance having any anxiety arising from its use. I need not say that in its employment, as in that of all other instruments, the greatest cleanliness is essential.

Chronic endo-cervicitis is often a sequela of the acute process, but it is far more commonly met with as a result of subinvolution of the whole organ, especially of the cervix, with chronic induration of the tissue and a marked hypertrophy of the mucous membrane. Under these latter conditions the actual mucous catarrh is, in the great majority of the cases, limited to the cervix, and does not extend into the uterus, even though the whole organ should be in a condition of subinvolution. Why this should be so I do not know; but the common experience that a few applications of some astringent to the cavity of the cervical canal will cure most of the cases of "uterine catarrh" has led to a very frequent overlooking of the existence of chronic endometritis. In the chronic endo-cervicitis of subinvolution the lips are thick and everted, and the cervical canal is widely open. If a section of the cervix in such a condition be examined, it will be found that the mucous membrane has retained in great part the characters it presents in the pregnant condition. It is about three times as thick as it is in the normal non-pregnant condition, its processes retain their dendritic form, and the crypts their exaggerated depth. In such a condition the use of an escharotic is indicated, and in this disease one or two applications of nitrate of silver are always beneficial, but its use must not be pushed too far. For the second stage of the treatment carbolic acid is best, and that should be followed by the glycerine of lead. Failing these milder measures, the best, safest, and most permanent remedy is to dilate the uterus, scrape it freely out with a sharp curette, and then touch its surface over with Pacquelin's cautery. The general treatment of chronic metritis with subinvolution will be considered by-and-by.

In pregnancy, the mucous membrane of the cervix takes on the characters already described, and thereby closes the uterine cavity. During this process it is not unusual to find the patients complain of the profuse leucorrhœa which accompanies it. Great care must be taken, therefore, before any application be made to the inside of the cervix on account of endo-cervicitis, to be perfectly sure that pregnancy is not the cause of it. In such a case only the use of vaginal injections of acetate of lead or sulphate of zinc is allowable. I have known more than one case where the rash use of the caustic-holder has resulted in an unexpected miscarriage. After labour, especially after a first labour, it is not unusual to find women suffering from endo-

cervicitis of a subacute or almost acute kind. During the last few weeks of pregnancy, and for some time after labour, married life has been suspended, and the husband has lost possibly what Ricord has called *acclimatisation*. The discharge from this endo-cervicitis may therefore, at the first congress, have all the effect upon him of a gonorrhœa, and it has repeatedly fallen to my lot to relieve both husbands and wives of a painful misapprehension of conjugal fidelity based upon this fact. A husband may suspect his wife's chastity under the circumstances, though it is infinitely more likely to be the converse; for, as a rule, when a woman makes the unpleasant discovery "that there is something wrong" with her husband, she immediately credits some other woman with the mischief; then, in addition, she blames her husband for her own condition. A little detailed explanation will always be enough for reasonable women, and the others are best left alone.

Hypertrophic elongation of the cervix may be either congenital or acquired, in the latter case being always the result of pregnancy, associated with general subinvolution of the organ, and very rarely, in my experience at least, requiring operative interference. If the acquired form be associated with prolapse or protrusion of the uterus, the whole condition may require a surgical remedy. The peculiar elongation of the cervix which is so often met with in sterile women is unquestionably of congenital origin, though the malformation becomes considerably exaggerated after puberty. In several instances I have seen it so marked that the os externum was visible outside the vulva in girls under the age of puberty. Usually, however, even when protrusion does occur, it is not till the patients are at the nubile age. The great majority of the cases of this malformation come under our notice by reason of the sterility of which it is the cause. The vagina is always short, and from the flexure a long conical cervix projects, very often appearing outside the vulva, with the mucous surface transformed into skin. Above the flexure of the vagina the cervix may also be felt elongated, and the length of the whole organ is exaggerated. The os is always small, and the cervical canal narrowed. The condition is a very troublesome one, and is a source of great distress in a married woman. The best remedy is amputation of the vaginal portion by the *écraseur*, and subsequent dilatation of the rest of the canal. In this way I have repeatedly enabled the patients to become pregnant, the pregnancy always resulting in a cure of the imperfect condition of the vagina. Some years ago I had under my care, in association with my friend Mr. H. Langley Browne, of West Bromwich, a very pronounced case of this malformation, where pregnancy has followed dilatation without amputation; and the condition became very remarkable. The cervix felt like a protruded uterus, with which the sudden swelling of the pregnant fundus appeared to have no connection until very

careful examination was made. In fact, unless this patient had been under my care previous to her becoming pregnant, the diagnosis would have been very difficult. No difficulty was experienced in the confinement of this patient, the cervix dilated easily, and no instrumental assistance was required. She has had several children since the incident of my seeing her in her first pregnancy.

In one case of this hypertrophic elongation of the cervix I had to amputate nearly two inches of the organ in order to reach a polypus. The elongated cervix would not dilate by sponge sufficiently to allow me to manipulate. The patient recovered from the double operation without a bad symptom. It is perfectly certain, however, that this peculiar condition of the uterus when complicated by pregnancy may lead to very serious difficulties in delivery, for Professor Simpson describes in the *Edinburgh Obstetrical Society's Transactions* (Vol. 8, page 34) an extremely interesting case, where it became necessary for him to break up the head of a child in order to deliver a woman in whom the cervix was between four and five inches long and correspondingly thickened; and he mentions other cases where lateral incisions nearly two inches deep had to be made through the cervix before delivery could be effected.

A very singular case is published in the *American Journal of Obstetrics* for November, 1888, in which Cæsarean Section was performed under similar circumstances, but it is perfectly clear from the narration of the case that this Cæsarean Section was an accident, due to the mistaken belief that the patient was suffering from ectopic pregnancy, and it is very doubtful whether it was either necessitated or justified by the hypertrophic elongation of the cervix.

In cases of amenorrhœa or dysmenorrhœa we constantly find that the uterus and also its associated organs have been insufficiently developed, and have retained more or less of their infantile characters. This condition is readily to be diagnosed by the state of the cervix. It is small and nipple-like, the canal being correspondingly contracted, and there is almost always a marked degree of antelexion. Very many instances of the "infantile uterus" will be met with in young women otherwise perfectly formed, and appearing in the most robust health. In these cases iron alone is of no manner of use. What is wanted is a mechanical stimulus to the uterus, and that is best afforded by Simpson's galvanic pessary—a remedy, however, which is full of risk. Accompanying this arrest of development of the sexual organs we have many diseases of the nervous system directly due to it, more especially epilepsy. In hospital practice I have seen a large number of cases of epilepsy due to menstrual suppression or

insufficiency, and which have completely recovered as soon as the function has been properly established.

Stricture of the cervical canal, save in well-marked cases of arrest of development, or from traumatic causes, is not at all frequent, though stricture of either of its orifices is very common, especially that of the external os, already described. Stricture of the canal is best treated by its gradual dilatation by means of intra-uterine stems. Stricture of the internal os can be cured most readily by bilateral incision, followed by the prolonged use of an ebonite or glass stem. Mere dilatation of the internal os in cases of stricture is not very successful, because there certainly seems to be more of a spasmodic than of an organic character in the strictures at this point. This seems to me to account for the otherwise inexplicable cases which almost every gynaecologist seems to have met with, and which I have repeatedly experienced, where, though a large-sized sound may pass readily through the internal os, yet the dysmenorrhœa and the sterility are cured by the performance of Simpson's operation.

The symptoms of this form of stricture of course closely resemble those of other kinds of mechanical dysmenorrhœa, but the character and date of the pain will often be found of great help in the diagnosis. It is very often difficult to get a nulliparous woman to understand what expulsive pains are, but some patients give such graphic descriptions of their sufferings as greatly to assist in the diagnosis. Two rules may be laid down about the pain, which hold good in most cases, though exceptionally they fail us. The first is, that if the pain precedes the appearance of the menstrual flow, the dysmenorrhœa is tubal; whilst if the pain follows the discharge, is of a spasmodic character, and chiefly referred to the back, it is due to some mechanical obstruction in the uterus. Stricture of the internal os is sometimes met with after a first labour, causing subsequent sterility, and is then probably of traumatic origin. I have never seen any cases of atresia of the cervical canal or internal os which have not been congenital or due to the heroic use of caustics. The treatment of such cases would differ in no way from that of atresia of the vagina or external os, such as has been already described.

Tumours of the Cervix.—I have met with small cysts in the cervix, never larger than a good-sized pea, and filled with glairy fluid. Their outside wall is always very thin, and they probably always disappear by spontaneous rupture. I had the opportunity of examining one in situ, in a virgin uterus, and found that it consisted of the saccular dilatation of a mucus crypt, and was filled with inspissated mucus. They are never of any clinical importance. Small mucous polypi are not uncommon in the cervix. They are generally of a bright red colour and very

vascular, they never reach a large size, and, as they give rise to no symptoms, their discovery is usually quite accidental. They are very soft, break up very easily, and do not seem apt to return. They consist, so far as I have been able to make out, of a fragment of the villous mucous surface which has undergone hypertrophy with an increase of vascularity. They are quite different from the myomatous polypi to be afterwards described; but it must be borne in mind that these also may be found occasionally to be of cervical origin.

I have already drawn attention to syphilitic disease of the uterus, so that very little more need be said of it. I have in my possession a post-mortem specimen of it, which shows that the change consists essentially in an affection of the epithelium, the mucus crypts being dilated and filled completely by large round cells instead of their ordinary columnar epithelium, the whole mucous layer being thickened, and the length of the crypts increased. The same changes are to be observed in syphilitic disease of the tongue. Its clinical appearance is, as I have already said, very like that of cancer, and care should be taken to avoid mistakes.

Cancer.—The whole of this important subject may here be discussed with convenience, because in an overwhelming majority of cases it is the os and cervix which are first attacked. The disease is at once the most painful of all the manifold afflictions from which humanity suffers, and the most terrible, because nothing can be done for cure, and even our palliative measures are insufficient. Like all other special practitioners, I have had a painfully large experience of this disease, and I can hardly help gathering the impression that it is becoming more common than it used to be. To an investigation of the pathology of uterine cancer I have devoted a large amount of personal work, and have arrived at a conclusion similar to that of Waldeyer, that every case of uterine cancer is of epithelial origin. In fact, it may always be ranged under two classes: the first, in which the epithelial proliferation extends outwards and becomes villous; and the second, by far the more common, in which the crypts are first involved, the cellular changes spreading inwards from them.

The first of these varieties of cancer is very rare, and is generally known as "cauliflower excrescence of the cervix," a name which has the merit of being graphically descriptive, but erroneous in that it gives the impression that the disease never affects the fundus. I do not suppose that any one practitioner has had a very extensive experience of this disease; at least, I do not gather the fact from the statement of any writer. In my experience it has been very rare, for out of many hundreds of cases of uterine cancer I have met with less than a score of instances. In one

of these the tumour grew, not from the cervix, but from the fundus, and I removed it again and again during its course of nearly three years. The patient died purely of exhaustion, and after death the uterus was not fixed, neither were any other organs involved. In another case I also removed the disease through the vagina, and finally I removed the whole uterus, because the disease was growing from a limited area of the fundus. But the disease recurred and killed the patient.

The disease seems to me to be wholly analogous to villous cancer, as met with in the bladder and intestines, and should have that name. It arises in the villi of the uterine mucous surface, and most frequently, therefore, in the cervix, and it does not usually show any tendency to invade the neighbouring mucous surface. Indeed, I have seen a mass of it almost as large as a child's head scooped out of the vagina; and, after the removal was complete, we found the mucous surface of the vagina perfectly healthy up to the commencement of the villous surface of the cervix. This disease is not always malignant, for Simpson describes a case in which, eighteen years after removal, it had not returned. I have now under my care a girl, aged twenty, in whom a soft dendritic growth forms in and extrudes from the cervix, and returns after a time. It causes her no great inconvenience; yet in appearance, and even in its elements, it is somewhat like the cauliflower excrescence. It may become malignant by-and-by; but really all attempts to define malignancy have as yet failed, and we have no other means of classifying a large number of growths than that rendered by the tersely practical pathology of Syme, who used to teach us that he regarded everything as malignant which he could not cure. The great majority of the cases of this villous cancer of the uterus are malignant—that is, they will return after removal, and will not be cured.

In October, 1878, I removed from a patient at the Women's Hospital, a polypus as large as a closed fist, lying free in the vagina, and attached by a well-marked pedicle just within the cervix. The patient had been suffering from all the symptoms of polypus for nearly five years. The naked-eye appearances of the tumour were exactly those of a myoma, but on cutting into it its consistency and structure struck me as being different. On microscopic examination I found it to be composed exclusively of epithelial cells, and these were found to be here and there arranged in nests, exactly as in epithelial cancer of the skin. Upon this ground I foretold the return of the disease, and within six months my prognosis was confirmed. But, on the other hand, I have seen precisely the same appearances on microscopic examination of tumours which have never returned, and my conclusion is, after many years of hard work at the microscope, and a large clinical experience, that the microscope has not helped

us in the least in the prognosis of tumours in the pelvis, abdomen, and breast.

Any statements concerning the other variety of cancer of the uterus—that in which the epithelial proliferation originates in the crypts, and spreads from them in all directions—must be made still more unfavourable. For it there is no cure. I have removed it by a variety of operative proceedings in a large number of cases, and have never had a cure. Even in the remarkable case where the efficiency of the operation was secured by the sloughing out of the whole uterus after the removal of some cancer by Dr. Mundé, the disease returned in the scar.

The proposal to deal with cancer of the uterus by complete removal of the organ meets, I need hardly add, with my strong disapproval. My reasons are that its primary mortality must always be heavy, and that the few cases in which the disease does not recur are clearly errors of diagnosis. Further, operations for a disease which gives unjustifiable secondary results has no place in good surgery; and it complicates, in the confused mind of the public, the issue of electing to have operations performed the secondary results of which are perfect. As I like my work to be stable, I have always opposed this cutting out of the uterus for cancer, and my first judgment has been confirmed by the results.

The causes of this dreadful disease are involved in obscurity, and the only fact bearing on them which is in our possession is that heredity has a strongly predisposing tendency. Uterine cancer comes to the old and the young for I have seen it begin at twenty-two and at seventy-five. It comes to the single and the married, to the sterile woman and to her who has borne many children, but it is most apt to appear in the years just preceding the climacteric change.

The vexed questions of the pathology of cancer generally, or of the disease as found in the uterus, cannot be discussed here without an unreasonable and useless extension of this work. Histologically, the characters are essentially those of immature and reckless cell proliferation, the presence of numerous nuclei, both in the cells and free, suggesting the idea that they have had no time to become full grown; and I have never failed to find evidence that the primary changes take place in the epithelium. I do not believe, therefore, in primary scirrhus disease of the uterus—that is to say, a cancer of the uterus in which the epithelium was not the primary seat of the disease. That the uterus gets fixed in a hard mass, and itself undergoes changes which give it all the naked-eye and microscopic characters of scirrhus cancer, is no doubt true; but after having watched a large number of cases from the beginning to the end, I have no hesitation in giving my adhesion to the view that they are all truly epithelial, and that the subsequent changes are secondary, just as they are in

the tongue, the presence of scirrhus masses being no proof of that being a primary form of the disease. Periodically we have an irruption of new nomenclatures for tumours and cancers, and with their new names the propounders fondly believe they have new truths and new conclusions. But it has not proved so yet. The new words introduce confusion, trouble the seniors, and make juniors feel as if they knew something their fathers were ignorant of—but they do not.

The course of the disease varies very greatly in different patients, without any apparent reason; and even in cases where the beginnings have been almost identical, the endings are terribly different. Thus I have had under my care two women, one of whom I had watched for nearly four years, and in her the deep ulcer, with raised and indurated edges, which she had when I first saw her, had scarcely increased. The other when first seen had an ulcer not so large, but very similar in character, yet in six weeks it had opened into the bladder and rectum, and in a few more weeks it killed the patient, who was only twenty-seven years of age. In some cases the disease seems to progress chiefly by destruction of tissue; in others, by growth and implication of surrounding organs. In the former category are to be found instances of the variety described by Clark as the rodent ulcer, though neither clinically nor pathologically does this differ from the other forms. The only difference is in its course. Occasionally the ulcerative form attacks the fundus, and never appears outside the cervix at all. An interesting case of this kind was sent me by Dr. Evans, of Sutton Coldfield, in which the first symptom to make the diagnosis certain was the passage of the urine through the cervix.

The symptoms of cancer are very various, and depend in great measure on the course the disease takes. Thus in the villous variety the chief symptom is the persistent occurrence of a watery and offensive discharge, with more or less profuse hæmorrhage at intervals, especially after coitus or any exertion. There may be very little pain, and the malignant cachexia may never make any appearance beyond that of spanæmia. Discharge of a watery and often blood-coloured fluid, with occasional hæmorrhages, is an almost constant symptom in all the forms of uterine cancer, and sometimes the hæmorrhage is continuous and extremely profuse. When hæmorrhage, either irregular or periodic, occurs in a woman whose menstruation has ceased for some years, it may be taken almost for granted that the condition is due to malignant disease. I have never known an exception to this, though I have often had to wait for months, in one case for nearly three years, before the evidence was complete. This discharge is generally very offensive, so that a keen nose may diagnose cancer before a question is asked. Women in the class of life from which hospital patients are drawn are so habituated to the loss of blood that it is no unusual thing

for them to apply to us in the very last stage of the disease, without their having any idea that the cause of their loss of blood could be anything more serious than the change of life or the result of a miscarriage. Pain is generally a most distressing, persistent, and often an almost uncontrollable symptom, and to relieve it is almost all that is left to the attendant in the majority of cases. For this there is only one drug of the slightest use, according to my experience, and that of course is opium. Henbane, belladonna, and conium may all be dismissed. Chloral hydrate is of no use for relieving pain short of sending the patient to sleep—that is, it is a pure hypnotic and not a sedative. Cocain is too dangerous for continuous use.

The use of opium in cases of cancer requires a little care in order to get the greatest amount of benefit out of it. If the patient has been told of her condition, and made fully aware of her fate, a full explanation should be entered into concerning the use of the drug. But if for any reason it has been thought well to temporize, then the prescriptions must be made to correspond. I cannot help here, however, entering my protest against the too prevalent custom of withholding from patients affected by cancer a candid statement of their condition. Having made up my mind to a diagnosis, I never withhold it in such a case.

To use opium well for the relief of pain in cancer it should be directed, in the early stages of the disease, in full doses at bedtime, in the form of 30 to 50 drops of the ordinary tincture. The pain of cancer, especially when not far advanced, is always worst at night, and the patient's comfort and health are greatly aided by a good night's rest. They should be persuaded to restrict themselves as long as possible to the one dose at bedtime, and to refrain from taking any during the day. As soon as this is begun the efficacy of the drug rapidly diminishes, for they cannot take large doses in the daytime, and the small stimulant doses are mischievous in many ways. When the activity of the drug has been diminished so that doses of 120 to 160 drops are necessary to procure sleep, it will be often found useful to change the method of administration to the use of a suppository of cocoa butter and morphia (gr. $\frac{1}{2}$ to gr. 1). Towards the close of the case the use of the hypodermic syringe must be introduced; but this should be delayed as long as possible, for the doses in this method of administration rapidly increase. Finally, it may be necessary to keep the patient protractedly under the influence of chloral, or even chloroform.

Anæsthetics may be entrusted to intelligent patients to be used by the apparatus of Dr. Crombie, which secures perfect immunity from over-administration; but of course it would be better that their use should be watched by a skilled practi-

tioner. For the arrest of the hæmorrhage, injections of strong vinegar, or a solution of ten per cent. of sulphate of iron, or a pessary containing five grains of perchloride of iron, will generally be found sufficient. Plugging the vagina is a barbarous and unscientific method, and should never be employed. Occasionally, however, bleeding is so persistent that no ordinary means will stop it, and then it is necessary to use some surgical hæmostatic. For this the red-hot iron affords the readiest, but the least satisfactory, weapon. The objection to its use is that the hæmorrhage is almost sure to recur after the separation of the slough; and the application of the cautery even over a large surface may not prove effectual. A much better means of arresting the loss of blood I have found to consist in the removal of the diseased tissue, by means of Simon's scoop, until sound tissue is reached. Indeed, this I believe to be the only justification for interfering with advanced cancers of the uterus except of the villous kind. If we find a small suspicious ulcer on the cervix, having a very slow growth, we may scoop it out, because we may now and then get a case where the disease will not return; though of this happy result the chances are not great if the disease is cancerous. All the many forms of treatment of a fancy kind which have been urged by their inventors as cures have as yet proved illusory, and most of them may be relegated to the province of the charlatan.

Death from uterine cancer is usually horribly protracted, so much so that I have often wished that I could have granted the euthanasia the patient ardently desired. Death usually results from the exhaustion caused by a combination of the discharge and hæmorrhage, and the functional disturbances due partly to the disease and partly to the hypnotics, but chiefly from a systemic poisoning induced by the cancer. To the shrunk, yellow, and death-like face which often characterizes the last stages of cancer the name of malignant cachexia has been given; but its appearance is not constant, and is often imitated by mere spanæmia, so that no great reliance can be placed on it as an aid to diagnosis in cases of doubt.

Acute gonorrhœal metritis is very rare; for even if the disease spread through the tubes to the ovaries, the body of the uterus seems to be rarely affected beyond its lining membrane. Traumatic metritis sometimes follows operations, but it so rapidly merges into the same form as that which arises from septic causes that it is impossible to discriminate the one from the other. Septic puerperal metritis is only too common and too fatal. It may occur after a miscarriage, or after labour; and it is fatal in by far the greater number of cases. I have known acute traumatic metritis to occur after the use of a tangle or a sponge tent, after simple incision of the os, and after the

removal of polypi, and other kindred operations. In fact, so prone are women, especially in the pregnant condition, to suffer from septic infection, that no precautions against infection can be too stringent. Thus I hold it to be absolutely inexcusable for practitioners who are engaged in dissecting-room or pathological investigations to attend obstetric patients or to perform any kind of surgical operations: and I further think that surgeons engaged in general surgical practice, involving constant attendance on suppurating surfaces, should never undertake any operations upon the uterus. We do not know the nature of the contagion which is thus communicated, but we can no longer blind ourselves to the fact that the hands of the surgeon are sometimes its vehicle. In the acute septic metritis of childbed this source of infection has been proved beyond a doubt, so that the responsibility of the attendant is now enforced by law in cases where it is apparent.

Septic metritis is generally ushered in by a rigor, though this indication of mischief may be absent, and the first symptoms may be sickness, a quick pulse, and high temperature. Very soon the abdomen becomes distended: and if the uterus be then examined it will be found soft and very tender, with an offensive discharge issuing from the cervix. The breath begins to take on the peculiar hay-like odour of pyæmia; vomiting becomes incessant, the ejected matter being at first tinged with bile, and then with half-digested blood; and in a few hours the patient dies. In a few cases the symptoms do not reach this last stage, and the patient, being carried on for a few days, slowly recovers. In the treatment of such cases I have completely exhausted every recommendation which I have met with, and am not in a position to say that I have seen the least benefit from any drug but those of the purgative class, and I now entirely avoid the use of opiates, save in exceptional circumstances. In fact, I treat all such cases as I do those of traumatic peritonitis, as described in a subsequent chapter. It has been of recent years the habit to misuse the word "septic" by applying it to all sorts of inflammation. This has arisen from the common human error of attempting to twist every new fact into all sorts of positions, possible and impossible. No sooner had the discovery of Semelweiss (1851) reached London (1878) than almost every London surgeon became the victim of a "septic craze." That there are septic inflammations, particularly in puerperal women, caused by the introduction of the germs of some poison or of the microbes of decomposition, admits of no doubt; but to explain all inflammatory processes on this theory is as nonsensical as to explain all geological phenomena from what we see on the slopes of Vesuvius.

Acute metritis, whether traumatic or septic, is a far more serious condition than perimetritis, of which I shall have to say a great deal when speaking of the uterine appendages. As much care as possible must, therefore, be exercised to secure a differential diagnosis. Both conditions may be accompanied by or turn into suppurative peritonitis, for which the only remedy is abdominal section, as I shall afterwards show.

"Abscess of the uterus" has been so rarely described, and so many of the cases of it which have been recorded are open to other interpretations, that I had excluded the disease from my nosological table, and would have continued to do so had I not met with the following case some years ago, and been satisfied by it that an abscess of the true uterine wall does sometimes occur. The patient had borne four children; the last, only five months old, was still at the breast. After exposure to severe cold for some hours during a journey, she had a violent rigor, followed by severe supra-pubic pain. I saw her on the third day, and found a mass at the base of the bladder, very tender to touch and intimately associated with the uterus. The cervix was slightly open and very soft, and a thick, bloody, purulent discharge issued from it. I had, therefore, no hesitation in passing the sound, and found the uterine cavity of the normal length, and directed backwards, so that the point of the sound could be felt in the rectum. The mass moved with the uterus freely, so that I came to the conclusion that I had to do either with a small fibroid about to slough or with a true abscess of the anterior uterine wall. In either case it seemed to me advisable to have the cervix dilated; so I introduced a sponge tent, and administered a grain of morphia by hypodermic injection. Next day, when I removed the tent, I found it soaked with bright healthy pus; the uterine mass was not half the size it had been; the uterine cavity was full of pus, and when I passed my finger into it, I could feel a soft spot, with an aperture in its centre, on the anterior uterine wall, just within the cervix. The patient recovered perfectly in little more than a week, and now there is no fixation of the uterus, nor any remains of the mass whatever to be felt—a fact which seems to me to be a positive proof that the abscess was not parametric, as in such a case there is always some remnant for months afterwards.

Chronic metritis is the most common malady which comes under the notice of the gynaecologist in hospital practice. It has been described under a variety of names, such as "areolar hyperplasia," but I think common consent now makes all other names give place to the one adopted here.

Chronic inflammation of the uterus may be the result of acute metritis, though this is very rarely the case, for reasons I have already given; or it may be due to some acute inflammation which had its seat in neighbouring tissue. Thus after the subsidence

of perimetritis or parametritis, there is a condition of chronic metritis often left, which takes a long time to get well. But in the majority of the cases, one might almost say in ninety-nine out of every hundred, the chronic metritis is accompanied by and is directly due to subinvolution of the uterus after labour or after a miscarriage.

The process of the involution of the uterus after parturition need not be here alluded to further than to say that it is not completed, even by a perfectly healthy woman, in less than thirty or thirty-five days, and a great many accidents tend to delay it, or even to arrest it completely. Thus all inflammatory attacks in the pelvis occurring after labour, mental shocks, the suppression of the milk, retention of pieces of placenta, and, most frequently of all, that unconquerable habit of the lower orders of women, necessitated perhaps by their exigencies, of getting up too soon, interfere with it. There also seems to be a constitutional tendency to subinvolution in some women, to which we give the vague name of "laxity of fibre"; and instances of this peculiarity are not confined to the lower classes by any means, nor does it appear only in women who look unhealthy. Another frequent cause of the insufficient involution of the uterus is the neglect of an abortion or miscarriage, for women of nearly every class seem to regard such occurrences as events of the most trifling importance, whilst really they are generally more serious than labours.

The symptoms of subinvolution are shared by other conditions of the uterus, from which it is necessary carefully to discriminate it, for mistakes in this matter may have serious consequences. It may be accepted as the rule that a woman should not begin to menstruate until at least seven or eight months after delivery if she be suckling the child, or for two or three months if the child be not at the breast. If, therefore, a patient informs us that she has been regularly and profusely unwell ever since her confinement, or that she has had a continuous coloured discharge with occasional floodings, we may at once conclude that she is suffering from subinvolution, or perhaps something worse. In such a case an examination should always be made, first with the finger, and then, if necessary, with the dilator. If there is cancer of the cervix, the educated finger will be enough to detect its presence, and the subinvolution will be only a secondary matter. In the great majority of cases the subinvolution is simple and uncomplicated, and then the cervix will be found large and thick, with the os insufficiently closed, but not patent enough to admit the finger. There will also be a copious muco-purulent discharge existing between the menstrual periods, and these are likely to be too frequent, too prolonged, and too profuse. If the uterus be measured by the sound its cavity will be found to exceed the normal length of six centimetres, and then the diagnosis is

complete. But care must be taken to see that there is no persistent cause for the subinvolution, such as a piece of retained placenta. For the investigation of this point the history is very important. Has the patient had a miscarriage within the last few months? It is wonderful to find how difficult it is to get some women to give such a history as will answer this simple question. If it is likely that there has been a miscarriage, the suspicion must be entertained that a piece of placenta is still in the uterus, and in very many cases it will be found to be so. If the hæmorrhage has been severe and the patient is anæmic, the duty of the practitioner is clearly to search for and remove the retained fragment. If the cervix is open, so that the finger can almost be pushed in, the presence of a piece of placenta is pretty certain, and then it can easily be removed by my "alligator ovum forceps," which will nearly always pass through a cervix when a piece of placenta has been retained, without any previous dilatation.

It must never be forgotten that these patients are very much inclined to suffer from traumatism and from septic infection; and suitable precautions must therefore be taken by disinfectants to prevent such accidents as far as possible. It must also be borne in mind that small fragments of placenta may be left attached to the uterus after a labour at the full time and of the most normal character, even when superintended by an accomplished accoucheur. No fault is to be attributed in such a case, unless the practitioner has been so careless as to overlook symptoms which evidently pointed to the fact that a piece had been retained, and has allowed the patient to suffer either from hæmorrhage or septicæmia. Pieces of placenta may be left by the most competent practitioners, but only the most incompetent will leave them till they endanger or destroy the lives of the patients.

If the cervix be so closed and the history so indistinct that the retention of a piece of placenta is doubtful, and more especially if the hæmorrhage be not so severe as to demand immediate interference, then another and very important aid to diagnosis

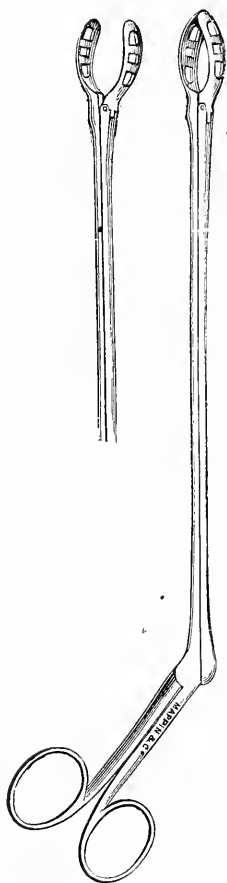


FIG. 13.—Tait's Ovum Forceps.

should be tried before the uterus need be dilated. This consists in the treatment of the patient by rest, and the administration of ergot and salts of potash. If the hæmorrhage yield permanently to this, we may be sure it is a case of simple subinvolution: but if it does not, then the cavity of the uterus must be explored. The action of good preparations of ergot upon the uterus, especially of Boujean's ergotin, needs proof no more than does that of opium on the nerve centres; but a word or two may be said of the salts of potash, and I do so chiefly in vindication of the views of my friend Professor Binz, of Bonn. Everyone knows that bromide of potash is a specific cure for simple subinvolution, but it is not so well known that the benefit is derived from the potash, and not, as is generally supposed, from the bromine. Bromide of sodium has had, in my experience, no such markedly beneficial results as the bromide of potash, but the effects of the latter are quite equalled by those of chlorate of potash. I have no doubt that other salts of potash would be equally beneficial if they could be borne in equally large doses. But, with the exception of the citrate, all the other salts are either poisonous or have such effects as greatly interfere with the processes of digestion, and therefore they can neither be given in doses large enough nor for a time sufficiently prolonged; whilst the citrate seems to pass so quickly out of the system as to exercise but little influence upon it. Combined with ergot, either the bromide or chlorate of potash, in doses of five grains thrice daily, will be found to exercise an almost infallible influence on uterine hæmorrhage, unless there be some mechanical cause for it, such as a cancerous growth, a polypus, or piece of placenta.

My routine treatment for subinvolution and all its complications for the last eighteen years has been chlorate of potash, five grains thrice daily, ergot to be added during and for two or three days before menstruation. The patient is also urged to keep her bed during the menstrual periods for six or eight months—though it is very rarely that they will do this. The great majority of cases—certainly ninety per cent.—will yield to this treatment, and the rest will yield to the curette and cauterization.

Whilst speaking of the treatment of uterine hæmorrhage, I may here say that no set of circumstances can justify plugging the vagina except the direst emergencies, when the practitioner is at a distance from aid and has not the proper apparatus by him. It is a barbarous, slovenly, unscientific proceeding, and is generally based upon incompetence and instigated by terror. If hæmorrhage be issuing from a closed os, it may be plugged with a sponge tent, in order that the source may be afterwards reached. But if the cause of the hæmorrhage be known and be irremovable, the treatment should be to inject the uterus with acetic acid, or even

with some salt of iron, though the latter is a proceeding accompanied by terrible risks.

In the cases of chronic metritis due to subinvolution, the uterus, besides being enlarged, is hard and tender to the touch, and enlargement of the ovaries may generally be found associated with it. This disease is chiefly due to recurrent subinvolution; that is, the uterus does not get properly involved after the first labour, the woman becomes again pregnant, and the process being repeated year after year, she finally gets a uterus twice or three times the normal size, with a continuous and copious leucorrhœal discharge. Menstruation becomes so frequent that she is rarely clear for more than a week, and at every washing she will have twenty-five to thirty diapers to be cleansed; and in such cases intercourse nearly always increases or brings on the flow. Prolapse or even protrusion is also a frequent addition to her miseries.

The treatment of this disease consists most essentially in absolute rest in bed during menstruation, and total suspension of marital life. I say rest in bed, because it is generally impossible to get women to rest on a couch. If you get them in bed they may stay there, but on a couch they will not rest whilst they have their clothes on. For medicines, there is nothing like potash and ergot, and there is nothing so bad as iron. In chronic metritis anæmia is of course an almost inevitable symptom, and by inexperienced practitioners iron is usually given in large quantities, their wonderment increasing as the patient gets worse. If the uterine condition be cured as a preparatory step, iron will work marvels, but until then iron does more harm than good. Topical applications of astringents by the ordinary syringe are quite useless; but intra-uterine remedies, administered properly, are powerful adjuvants to the general treatment. But before anyone begins to meddle with the inside of the uterus, even to introduce a sound, let me beg of him to be certain that it has no unexpected contents. Sure of this, he may apply medicaments such as desiccated sulphate of zinc, carbolic acid, solutions of nitrate of silver or chromic acid, or even nitric acid, either by means of Playfair's probes or by my soluble rods. The former are the more ready and generally useful means, the latter the more elegant and effective. Of chromic acid let me say that occasionally its application to the uterus produces the most extraordinary and immediate attacks of vomiting and purging, and that therefore it is not always a safe remedy. In cases where chronic metritis is the result of an acute process, very great caution must be exercised in applying any intra-uterine medication, lest the original mischief be re-excited.

Acute endometritis is nearly always a result of gonorrhœal infection, though I have met with instances where it seems to have been catarrhal. It is always associated with severe spasmodic pain

over the pubis, shooting down the thighs and into the back, accompanied by a certain amount of fever; but its characteristic signs are a profuse yellow purulent discharge issuing from the os, and a good deal of tenderness when the uterus is touched. Rest in bed, pessaries of lead and opium, hot fomentations over the abdomen, or even a blister, with general antiphlogistic treatment are necessary, and vaginal injections are to be sedulously avoided. After the acute stage has passed off, intra-uterine medication may be begun cautiously, but the risk of sending the inflammation along the tubes must always be borne in mind.

Chronic endometritis may result from the acute process, but it is infinitely more frequently associated with the chronic metritis resulting from subinvolution, and is then to be treated by the topical application of astringents or by the curette. It is sometimes met with in young unmarried women, associated with chronic ovaritis, and it is then a fertile source of bad health, and when they come to be married, of sterility. It is betrayed by profuse menstruation, followed by a leucorrhœa which is most abundant just after the period, getting less as the month goes on. It is to be cured by local applications already described, and by the treatment for chronic ovaritis as given elsewhere.

There is a special form of endometritis to which the name of *membranacea* has been added, on account of its peculiar feature being that the uterus throws off a membranous cast at intervals. This disease used to be known by the name of membranous dysmenorrhœa; but as it often exists without being in any way a dysmenorrhœa, and as the casts are sometimes thrown off at other times than the menstrual periods, I very much prefer the name of membranous endometritis. The disease is far from uncommon, and its supposed rarity is due entirely to the want of its indications being properly looked for. It is also one of the most obstinate causes of dysmenorrhœa, and involves the necessity of long-continued treatment for its cure. The nature of the membrane has been a fertile source of discussion by gynæcologists, one party setting forth the view that the membrane is always the true deciduous surface of the uterus, and that its casting is due to some ovarian mischief; whilst other authorities hold that it is an adventitious structure, the result of an inflammatory action. I believe that the latter view is really in greater part the true one, though this may seem going back to an old-fashioned phrase of gynæcopathology; but it is the result of a somewhat extended and, I believe, a careful study of the subject. I have certainly met with a few cases of dysmenorrhœa in which shreds of membrane, and two cases where complete membranous casts of the uterus, were repeatedly found to be passed at or after menstruation, and which membranes were unquestionably the deciduous surface of the uterus. But these all occurred in married and sterile women, or in sterile women who ought to have been

married. I have in only one case seen such a membrane passed by a virgin ;* and though I have examined a considerable number of shreds of membrane from virginal patients, I never saw a trace of structure in any of them. Such patients very often pass lumps of membrane at times which are not menstrual, and these are always associated with purulent discharge. All the cases of the discharge of truly deciduous membranes which have occurred in my practice have seemed to me to be cases of menstrual miscarriage of a peculiar kind, hitherto, as far as I can discover, incompletely described or altogether overlooked ; but I do not mean that this is sufficiently conclusive to enable me to assert that every case of membranous endometritis where the mucous surface of the uterus is shed must necessarily involve unchastity in an unmarried patient.

The first feature of these cases is that their periods are irregular, the inter-menstrual time being very often protracted to five, six, seven, or even eight weeks. When it does come on the period is short, and the loss not always great ; neither is pain always a feature of the menstruation. But almost invariably, or at least in a majority of menstruations, shreds of membrane, or complete membranous casts of the uterine cavity, are passed, and these are always possessed of the microscopic characters of the uterine mucous surface. The case of one patient is so interesting, and my opportunities of studying it have been so complete, that I shall give its details in full.

In 1871 I was consulted by a lady who had been married for nearly twelve years without ever having become a mother. She suffered from irregular menstruation, which was occasionally painful, and when unwell, and for a few days after, she usually, but not always, passed shreds of membrane. I examined this membrane repeatedly, and always found it to present abundant evidence of the peculiar glandular structure of the uterine mucous surface. In three instances complete and closed casts were passed, and preserved for me. The first two presented a uniformly villous appearance outside a smooth lining surface, which was covered by pavement epithelium, and they contained nothing but a small quantity of slightly albuminous and perfectly clear fluid. But the third specimen displayed its villous character more completely at one part of its external surface than elsewhere, and when it was opened at the corresponding point inside there was a little pediculated button of white substance,

* The case is one of great interest :—August 27, 1880. L. S., aged twenty, virgin ; menses began at fourteen ; menses quite regular. Three months after it began to be extremely painful, and she has passed every month since a complete membranous cast of the uterus, one of which she had with her. Pain begins about half an hour before the discharge, and lasts until the cast is parted with, when it immediately and suddenly ceases, the pain being described as of purely expulsive character. The period lasts six days, and the cast is always passed on the third. After every means suggested by authorities and consultations had failed, I had to resort to removal of uterine appendages to give the poor girl the relief she required, and this was perfectly and immediately successful.

which undoubtedly was an arrested embryo. Before she passed this particular cast she had gone nearly nine weeks without menstruating, the longest time she had ever missed in her life. Just after this she became a widow, and her menstruation, though scanty, became quite regular and perfectly free from membrane. She married within a twelvemonth of the death of her first husband, had a healthy child a year afterwards, and she is now the mother of four. It is impossible not to come to the conclusion that in this case most of the menstruations were really miscarriages, and that what might have been set down as a case of membranous dysmenorrhœa was really an instance of repeated miscarriage due to an incomplete sterility on the part of the husband. But when I inquired into the history of her first married life, I obtained no evidence of incapacity in the male, but there certainly must have been a lack of fertility. This is a condition quite analogous to repeated miscarriages due to syphilis in the husband.

This is curiously substantiated by another case which was under my care almost at the same time. She had been married ten years, and had never had a child, though she believed she had had several miscarriages, none of which had gone over the fourth month; but in this part of the history the account is not very clear. She stated distinctly, however, that previous to her marriage menstruation had been regular and free from pain, but that after marriage it became irregular and painful. Her medical attendant, Mr. Hallwright, procured for me several bags of membrane which she passed at periods, and which he rightly regarded as miscarriages. They were always very small, never more than three centimetres in their greatest diameter, presented all the characters of the decidua described in the other case, except that they nearly always had a rudimentary representation of the embryo, though in one there was no trace of it. She had a large and increasing ovarian tumour, which I removed; and I hoped that, as she recovered, the altered nutrition of the organs might induce a more complete fulfilment of their functions. But in this I was disappointed, and the same menstrual miscarriages have occurred at intervals, although it is more than five years since the operation, and she is otherwise in perfect health.

These cases support the view of Devillers (*Dict. Med. et Chirurgie*, art. *Avortement*), and the theory he advocated is singularly in harmony with that which I had independently (and many years before) advanced. He has shown that there are two distinct parts in the sexual act. Thus "coitus may fertilize, but there may be no following development. The procreative power is distinct from that of development. A man's whole sexual force may, in fact, be spent on the one act of

fertilizing." He also states that the faculty of development is relative. Thus a weak man may impregnate a robust woman. She, by her strength, gives the necessary vitality to the ovum, so that it develops and grows. Instances are known where a woman has aborted with a first, and has had children to a second husband. This shows that there is "incomplete sterility" on the part of the husband, as well as absolute sterility.

I have had cases under my care where such miscarriages, occurring repeatedly, went on to the fourth or fifth month, the localized villi, already referred to, becoming developed into a large and healthy-looking placenta, of almost globular shape, in the midst of which was a small cavity, holding a few spoonfuls of limpid fluid. This undoubtedly represented the cavity of the ovum; for sometimes it had a stunted embryo, like a shirt button sewn on to its wall, but just as often there was no trace of it. Other examples of this sort have over and over again been submitted to me by practitioners for an opinion as to their nature. I have given to them the name of "fruitless pregnancies," and I believe they are caused by an absence of complete fertility in one or other parent—most probably on the part of the male—and that the so-called hydatidiform mole is merely a variety of them.

Certain it is that these cases have got mixed up with instances of true endometritis membranacea, though there is no evidence whatever that after the decidua is thrown off there is any inflammatory affection of the surface. Do instances ever occur of the uterus of a virgin throwing off its mucous surface at the menstrual period, so that its glandular structure can be recognized in the shreds? There may be such; but as I have closely watched for one, and have never yet seen it, I am very sceptical on the subject.

The other class of cases contains those in which there is a true exudative chronic endometritis. These are met with in married as well as in single women, but the married patients are always sterile. Menstruation is generally regular, often profuse, nearly always painful, and although the membrane generally appears at that time, its dehiscence is by no means confined to the menstrual periods. I have often removed it through the speculum by the probe, at a time quite intermediate between the menstrual periods. It is an extremely obstinate disease, and in some cases it seems possible only to relieve it, but not to cure. Sometimes it begins late in life, but generally the patients state that their sufferings date almost from puberty. Their menstrual pain is chiefly of an expulsive character, and begins immediately after the flow appears; and the period is always followed by a leucorrhœal discharge, which may or may not disappear before the next term. The discovery of membranous shreds, which are not merely washed clots, will complete the diagnosis.

In these sufferers a stricture of the internal os often exists, and the division of it generally relieves them greatly. The most efficient remedy is that which I first saw employed in Sir James Simpson's practice—the use of solid rods of exsiccated sulphate of zinc. He was also fond of using solid nitrate of silver in the same way; and I am bound to say that though it is far more painful than the zinc, it is on the whole safer.

In the employment of the terms “perimetritis” and “parametritis,” as introduced by Virchow (who knew nothing about gynecology), and advocated by Mathews Duncan (who has never had his fingers inside the pelvis from above), we have introduced a wholesale confusion into gynecology which will take many years yet of industrious work to get right. This confusion has been vastly aided by Dr. Emmett's teaching about “cellulitis.” If “parametritis” and “pelvic cellulitis” be relegated to their proper place—and they may be taken to mean the same thing—it is one of the rare conditions we have to deal with among the special ailments of women.

By perimetritis we mean an inflammatory action in the peritoneal investment of the uterus, so that the products of the diseased action are found chiefly, or it may be entirely, within the serous cavity. By parametritis we mean inflammation of the cellular tissue in the neighbourhood of the uterus, the results of that process being mainly found outside the peritoneum. Perimetritis is a much more fatal disease than parametritis, and occurs with greater frequency in association with two particular conditions. These are parturition, either at the full time or prematurely, and gonorrhœal infection. If it be borne in mind that the peritoneum must be regarded as a great lymph gland, in which the most important processes of absorption are carried on, we see at once an explanation of the readiness with which it becomes affected by any traumatic influence, and the fatality which accompanies any infection. By far the larger number of cases of perimetritis, or pelvic peritonitis, are the result of some traumatism of parturient women, and most of them, therefore, come under the care of the obstetric physician. Surgeons, unfortunately, also see it after ovariectomy and other operations; but as yet we have failed in such cases, where the precautions advocated elsewhere have been taken, to trace it to any other cause than traumatism. Puerperal and other forms of septic perimetritis are very fatal, for it rapidly becomes general peritonitis. It is ushered in by pain and tenderness over the uterus, quick pulse and high temperature, vomiting and hiccup, and distension of the abdomen. The only remedies worth mentioning are opium, warm fomentations, and blisters; but it is only exceptional that even their use is successful. In recent years I have proposed in such cases to open and clean out

the peritoneal cavity, and I have followed out this plan in five cases, of which two have been successful.

Perimetritis from the extension of a gonorrhœal inflammation along the tubes is described under the head of salpingitis, and little more need here be said of it save that is a very serious but not necessarily fatal disease, there being much less tendency apparently to the production of general peritonitis than in the septic form. Opiate pessaries and opium by the rectum and mouth, with warm fomentations and perhaps leeches over the pubis, are the best remedies. The lasting results of this disease are a tendency to the recurrence of the inflammatory mischief, functional disturbance of the ovaries, sterility, and very often an inability to resume marital functions. Its diagnosis is rendered difficult in the majority of the cases by the absence of history, for the patient may really be ignorant of the cause of her sufferings, or she may conceal it intentionally. Physical investigation at first yields but scanty information; but as the disease advances, the uterus will be found fixed, and pushed somewhat forwards, and the whole roof of the pelvis occupied by a boggy swelling.

The differential diagnosis and treatment of these cases will be discussed in the chapter on the uterine appendages. In cases of septic perimetritis the effusion at once takes the form of purulent lymph, but in the traumatic cases lymph alone is the chief product, so that we have a tendency developed towards general peritonitis in the one case, which is rapidly fatal; while in the other the vast majority of cases recover with damaged uterine appendages. *Recovery* in these cases does not, unfortunately, mean *cure*, as we shall see by-and-by. The lymph, in cases of recovery, often binds the uterus down to the sacrum, or to neighbouring organs, and in this way sometimes makes the patient a permanent invalid; and we have also more serious results, as pyosalpinx, existing for years in patients who have been pronounced "cured."

Before the light came which was shed upon these ailments by modern abdominal surgery I believed, as others did and do still, that parametritis, or pelvic cellulitis, was a common disease; and in my writings up to 1878 it is evident I confused cases of damaged uterine appendages with "pelvic cellulitis." The latter disease is rare, and occurs in two forms, depending for their characters on the situation of the disease. If it is situated in the inner half of the broad ligament it is to be recognized as a mass lying close to the uterus and in front of it, between the uterus and bladder, and into the bladder it generally bursts. If it exists in the outer half of the broad ligament it is to be recognized as an ill-defined mass lying on the brim of the pelvis, and fading off on that ridge. In this position it bursts over the brim of the pelvis and constitutes

the familiar "pelvic abscess," whose sinuses go on for years. Suppurating hæmatoceles of the broad ligament have similar endings. Rarely the abscess opens into the rectum, because it is generally situated far above the level of the rectum, and in front of it.

I treat all such cases, as I shall afterwards tell, by abdominal section and drainage, and the patients are cured in as many days as it takes them months to get well if treated in any other way.

Enough of subinvolution has already been said in connection with chronic metritis. Of the converse condition, superinvolution of the uterus, it must first be said that it is an extremely rare affection, and that all we know about it is due to Simpson. It is a condition perfectly analogous in its details to arrest of development of the uterus, with the difference in history that the superinvolved uterus has at one time been so large as to be pregnant. How the normal involution is carried on to hyperæchesis we do not know; and, as far as I can discover, we have only one description of the post-mortem appearance of a uterus so affected—that given originally by Simpson. The patient was twenty years of age, and had never menstruated after her first delivery; but no history is given of any febrile illness to which might have been attributed the abnormal absorption of the uterine substance. After death the uterus was only an inch and a half long, and its walls were less than half their normal thickness, their tissue appearing dense and fibrous. The ovaries were also much atrophied, and their dense fibrous tissue presented no appearance of Graafian vesicles. In this case it is of course doubtful whether the process was truly one of ovarian atrophy, followed by atrophy of the uterus in obedience to the usual law that all useless organs tend to disappear. Several cases of what I have had reason to believe was true superinvolution of the uterus have come under my care, but in every one there has been some febrile illness, generally of a zymotic character, which occurred at or soon after a labour or miscarriage; and my impression is that, of all the cases, those in which a miscarriage was the origin of the trouble were in the majority. In fact, I am strongly disposed to regard superinvolution as a result of an atrophic ovaritis occurring at a time when involution is going on. Thus in a case which I published in the *London Obstetrical Journal* for May, 1873, and which certainly was the most pronounced case of superinvolution I have ever seen, the patient had had scarlet fever during the first week of her convalescence from her second labour. She came under my care in 1871, seven years after the fever, and has remained under observation ever since. When I first saw her the uterus was perfectly infantile, the vaginal portion of the cervix being represented only by a pimple. Her menstrual periods had disappeared, and were replaced by severe epileptiform seizures, as

will be found detailed in the Journal. I succeeded in getting menstruation restored, and the uterus increased in size, by the use of galvanic pessaries; and as her periods became re-established, the epilepsy disappeared. But when I discontinued the use of the pessary, the menstruation slowly disappeared and the fits came gradually back, and this therapeutical experiment has been several times repeated with uniform results; and that the fits are epileptic is made certain by the severe injuries the poor woman inflicts upon herself during the attacks. Looking back on this case and others, and aided by the evidence of other facts referred to under the head of exanthematic ovaritis, I am led to believe that superinvolution is explained by the occurrence of ovaritis, followed by atrophy, during the puerperal month, and that the uterus merely follows in the steps of the ovary, carrying the process further, however, because it had been already in action, and stopping it only when perhaps there was no more muscular tissue left to absorb. I do not suppose that the exciting ovaritis need necessarily be exanthematic; but peri-oophoritis, or inflammatory action affecting the covering of the ovary, does not seem to affect menstruation—it rather inclines to induce sterility only. These views would explain many facts which are otherwise irreconcilable, and, what is most of all remarkable, the rarity of superinvolution. First of all, exanthematic or other interstitial ovaritis such as leads to ovarian atrophy and is not fatal, is very rare in puerperal women, the great majority of such cases ending in death. The few who recover are likely to suffer from superinvolution. Again, the numbers of non-puerperal women who suffer from ovarian atrophy, the result of inflammation, do not at the same time have atrophy of the uterus, because when the ovarian process began the uterus was not already undergoing involution. This explanation is quite in accordance with the history of and the appearances in Simpson's case, and also in harmony with the general principles of ovarian physiology. Its practical bearing is, that though in such cases we may get temporary relief from the galvanic stem, that relief will cease with the use of the instrument, or when, as sometimes happens, its stimulus becomes insufficient.

By the term hydrometra is meant the retention of the normal fluid secretion of the mucous surface of the uterus, and therefore hydramnios must be excluded from the definition; though the latter disease has been evidently included by some authors, under the term hydrometra, in the description of the diseases which may be mistaken for ovarian dropsy. Hydrometra results from the closure of the os or cervix, so that the secretion cannot obtain an exit; such closure taking place from cicatricial contraction after ulceration, or from some mechanical injury. Its symptoms consist of expulsive pains somewhat resembling those of kolpostasis or retention of the menses, but by no means so acute as these. It is a condi-

tion almost entirely confined, *ex necessitate*, to women who have passed the climacteric period of life, and it very rarely causes the uterus to reach any great size, because the greater part of the secretion of the internal mucous surface is capable of resorption, leaving behind only the more solid elements of the mucus. Simpson narrates a case of one unusual form of it, in which he drew off large quantities of serous fluid from the cavity of a uterus which had been distended to the size of the fifth or sixth month of pregnancy, the fluid being due to a canceroid tumour at the fundus. In such a case the symptoms would of course be severe, and would necessitate a careful examination. The first thought would be to eliminate the possibility of pregnancy, and then to open up the closed canal.

In September, 1878, I operated on a case of hydrometra in a young girl where none of the physical signs could have made an exact diagnosis possible. Menstruation began at sixteen, and never was regular. She missed often for three or four months, and when the flow did occur it was always scant, but never painful. The last period she had was in April, 1877, and in July of the same year it was noticed that she was increasing in size. In July, 1878, I saw her in consultation with Dr. Eshelby, of Stonehouse, and diagnosed a monocystic tumour, probably parovarian. For some reason or other she was tapped, but the cyst speedily refilled, and I performed abdominal section two months later. I made a median incision four inches long and passed through the usual structures, but I searched in vain for any indication of the peritoneal layer. The wall of the cyst was evidently muscular, and in opening into the cavity, and after removing about four quarts of limpid serum, it became evident that it was constituted by the body of the uterus. The reasons for this conclusion were, that it was lined by shreds of membrane; the cyst contracted remarkably during the operation; the cervix could be felt from the vagina to be, as it were, set on to the base of the cyst, and to be quite occluded; and, finally, the shape of the cyst, especially after contraction, was bifid at the fundus in the direction of the uterine cornua, and the intestines went down behind the posterior wall quite to the insertion of the vagina. I did not venture to carry my incision up so as to open the peritoneal cavity, but my belief is that the absence of the anterior peritoneal fold was congenital. I secured a drainage-tube in the wound and closed it. The cyst rapidly contracted, the patient made an uninterrupted recovery, is now perfectly well, but she has never menstruated since the operation.

Looking back over this case, I do not see how a more accurate diagnosis could have been made. Before the first tapping, I noted that the uterus was intimately associated with the tumour, as it

nearly always is in cases of parovarian cysts. I do not remember that I tried to pass the sound, and most probably I did not. I do not think, however, that if I had tried and failed, as I most assuredly would have done, that I should have been put on my guard as to the true nature of the case. If I had persevered and succeeded in forcing a passage up through the cervix I might have cured the patient in this way, but my impression is that the risk would have been far greater, and the chance of cure infinitely less, than by the process of abdominal section.

I have already spoken of the symptoms, diagnosis, and treatment of cases where a portion or the whole of the placenta has been retained after labour or a miscarriage, and little remains to be said except that I wish again to dwell upon the frequency with which such retention takes place, and to urge the duty of the practitioner to be ever on the alert to its possibility. Nurses and midwives constantly tell us that they have seen the after-birth, and that it was entire; and I have even heard competent practitioners declare that they were sure it was all away in cases where I have had to remove portions. No one can be sure of its entire removal. Indeed, there may be subsidiary placentæ, in the form of separate cotyledons, which no amount of examination of the major placenta could make us suspect the existence of. A remarkable instance of this was brought under my notice by Mr. J. B. Jackson, in whose practice a placental cotyledon of large size, and which never could have had any intimate relation with the rest of the organ, was passed two or three days after the birth of the latter. Persistent discharge of a watery, fœtid, or especially of a bloody kind, after the lapse of the ordinary time for the disappearance of the lochia, should always be a reason for a careful examination; and after a miscarriage the continuance of hæmorrhage or its recurrence should be similarly considered. In consultation with Dr. Thelwell Pike, of Malvern, I removed a large and perfectly separate cotyledon six days after labour.

Sometimes cases of persistent uterine hæmorrhage come to us with a history as if the patient were pregnant, and we find the uterus enlarged, but fail to discover the sounds of the fœtal heart or other definite signs of pregnancy. There is often also a continuous hydrorrhœa, which would be suggestive of cancer if its date were not too recent to be in accord with the greatly increased size of the uterus. Such cases may be instances either of a dead ovum with delayed miscarriage, or of the hydatidiform mole. In any case, I believe, persistent uterine hæmorrhage which resists rest, ergot, and bromide of potassium, requires active measures, so that I never hesitate to dilate, and thus facilitate the expulsion of the uterine contents. The hydatidiform mole rarely is retained in the uterus more than five months, and in the great majority of instances is expelled much earlier and without any risk. It is

due to the dropsical hypertrophy of the villi of the chorion in an incompletely fertilized ovum, and it is apt to recur in the same patient. I have had under my care a woman who had had five of these moles, and then became for the first time pregnant with a living child; but we were not certain of this till nearly the sixth month of her pregnancy, when the foetal heart was heard. I believe the pathology of this disease to be somewhat similar to the cases of incompletely fertilised ova described under the head of endometritis membranacea, for they certainly are the result of impregnation.

Since Simpson first brought the importance of uterine displacements before the notice of the profession, in 1848, more nonsense has been written on the subject than upon any other that has occupied the attention of medical writers; and after all that has been written I cannot find that any more complete and satisfactory account of them has been given since the appearance of his original lectures. After an experience which now runs over a quarter of a century, I am disposed to think that even Simpson over-rated the importance of uterine displacements; but however he might have erred in that direction, his mistakes are but mole-hills compared to the mountains raised by some of his followers.

It is amusing to notice the various aspects in which different writers view this really simple subject, how they run from one extreme to the other, and raise difficulties by the introduction of wholly needless complications. One eminent gynæcologist seems to discover a flexion or a version in every patient he sees; I have even found him endeavouring to arrest hæmorrhage due to a piece of retained placenta by a complicated instrument placed to rectify a supposed retroflexion. In the practice of another equally eminent specialist no flexions or versions ever seem to occur, and everything is set down to uterine "inflammation and irritation," and these are treated by useless drugs. All this is very unfortunate for the profession, and greatly interferes with the confidence of both profession and public in special practitioners. It is a difficult matter to rid ourselves of prejudices and predilections, and there is a constant tendency in the human mind to use only one focal adjustment of the mental lenses for all kinds of objects. In the matter of uterine displacements, I believe that this tendency will be completely obviated by a careful study of cases, aided by the light which Simpson's strong common sense has thrown upon them.

When Scanzoni tells us gravely that anteфлекions are at least eight times more frequent than retroфлекions, we can only conclude that the distinguished Wurtzburg Professor has been looking for displacements with too great an eagerness, has found them in conditions which are wholly natural, and has not paid a due attention to the strictness of phraseology.

Let me first say that Simpson's original division of terms should be strictly adhered to—that is, that a *version* should mean only such a condition as that in which the uterus is turned out of its proper axis without its tube being at all, or at least greatly bent; and that a *flexion* should mean only a bending of the tube upon itself, with more or less of a sharp curvature. The normal condition of the uterus in the nullipara is anteversion, with more or less tendency to ante flexion, the curve of the tube being gradual; and just in proportion as we go backwards in the development of the organ do we find this condition exaggerated. Any uterus, therefore, which is incompletely developed is almost sure to be markedly anteverted, if not antelected. But to treat this as a diseased condition, unless there be very definite symptoms associated with it, is the merest charlatanry; and the practice of doing so is one which has brought no small amount of odium upon special practitioners. In this practice we find the basis of such results as those given by authors who seem to hold that fifty per cent. of all the women we meet are the victims of a displacement.

The views which I now express are those which I entertained when I first wrote on the subject some sixteen years ago, and I have been entirely confirmed in them by increased experience. The most recent writer on the subject, Schultz, asserts what I know to be true—that in the erect position, with the rectum and bladder empty, the uterus is nearly horizontal, and is more or less antelected. This is the normal position under all circumstances; but the position of a nulliparous uterus is more than this—the fundus is actually turned downwards, and an infantile uterus actually has the fundus pointing almost straight towards the ground. But this is not to be regarded as merely a condition of the uterus, for the ovaries and tubes always share in the condition of arrested development. The so-called “displacement in front” is no reason for torturing these poor women with mischievous pessaries. The only local treatment which will be of the slightest use is the galvanic stem, and that is far too risky. I have entirely abandoned it, and I entirely endorse Schultz's statement that “the treatment (even) of pathological antelection by intra-uterine pessaries is improper, and generally injurious.” The employment of any kind of pessary in congenital cases is mere nonsense. The only treatment that is of any use is a constitutional one—to attempt to induce an advance of development by prolonged courses of strong chalybeates, and hot douches just before the menstrual period. If these fail, and the suffering from the dysmenorrhœa is not relieved and is unbearable, the removal of the uterine appendages may be discussed. I am certain it is a far safer proceeding than the employment of intra-uterine stems, and it has the merit of being effectual. Schultz speaks of anteversion

being occasionally pathological, but in my experience this is very rare, and when it occurs it is due, like retroversion, to subinvolution.

In fact, the pathology and treatment of this much-confused subject have now resolved themselves, in my mind, into a matter of the utmost simplicity. Of course, I am not alluding now to the displacements of the uterus caused by the pressure of tumours, for it is absurd to regard such an abnormality in the same discussion as those usually spoken of as "uterine displacements." Similarly I do not speak of the rotations and lateral displacements occasionally discovered by accident, and which I have never seen any reason to regard as being of the slightest importance. Schultz makes much of them in his book, but without the slightest justification, as it seems to me.

The displacement of the greatest importance is the backward displacement of the uterus; it matters very little really whether it be *version* or *flexion*, or both, because it is always pathological. It is divided sharply into classes—one very common, perhaps the commonest uterine trouble we have to deal with, and the one most easily cured; the other not common, and difficult to cure in any way short of surgical operation.

The first class is that in which the displacement is due to a previous puerperal condition, and where it has arisen in an arrest of the process of subinvolution. In the upper ranks this is generally due to the non-fulfilment of the functions of lactation; in the hospital class of patients it is due to the women getting about too soon. In any case the retaining ligaments are stretched, and the uterus tumbles backwards and remains in its abnormal position till it is replaced, the process of involution being generally arrested. Sometimes, however, the involution proceeds, and then we have the displaced organ of normal size. This is, however, rare, for I am sure that the great bulk of these cases are spontaneously cured by the process of involution; and even when they are not, it by no means follows that mere displacement of the uterus backwards will be a source of trouble. I am sure that many women go about in this abnormal state without any symptoms at all. It is when subinvolution and retroversion coincide, still more when they go on to chronic metritis, that trouble ensues. Then we have profuse and too frequent menstruation, profuse intercurrent leucorrhoea, backache and bearing down, and the intolerable distress of the "pelvic woman." In such cases the uterus is rarely fixed by adhesions, and is entirely replaced. Pessaries for its retention may be used, but I always prefer to try to cure my patients first by chlorate of potash and ergot, and I succeed in 90 per cent. I hate pessaries, and I never use them if I can help it. If I am obliged, I use either Fowler's cup pessary or one I devised some years ago, and known as the "wedge."

Both are made of ebonite. The former is fashioned as a handled cup, through the opening of which (*d*) the cervix passes, the displaced fundus resting on the cushion (*e*), the handle (*b*) resting either on the rectum or the pubis, as the case may be one of anteversion or retroversion. The aperture (*c*) is for the finger of the surgeon in removing or placing the instrument. This instrument is made of three sizes, and is very useful in those cases in which it is found to fit. It has two very serious defects, however, in that it cannot be altered to each case, and that it is somewhat costly. Sometimes, also, I have found that it turns round into the transverse axis of the pelvis, and then does more harm than good.

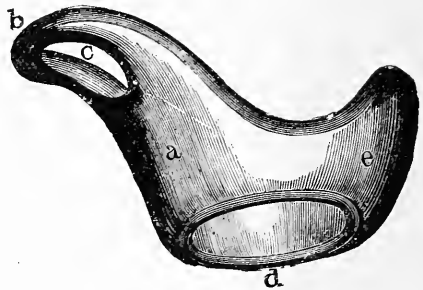


FIG. 14.—Fowler's Pessary.

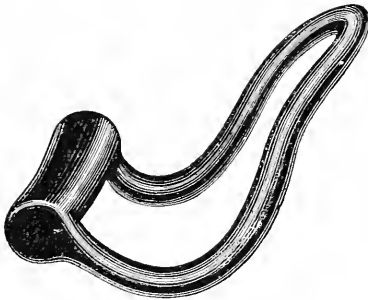


FIG. 15.—Tait's Wedge Pessary.

My wedge pessary has a similar action and is simpler. The rounded mass at the broad end forms a part on which the fundus safely rests. All pessaries ought to be made of celluloid or ebonite, for soft rubber pessaries cause a great deal of discharge, and therefore should be avoided. The celluloid ring can be moulded in warm water into any required shape, and is an admirable invention. If involution has been completed I believe

pessaries never cure a retroversion; the only thing that will is another pregnancy. A fashion has lately been introduced of elevating the uterus by shortening the round ligaments, but no authoritative decision has yet been uttered upon its merits in the matter of permanent success. I have only twice had reason to employ it, and I found the reposition was maintained only a few months in one case, whilst the operation nearly cost me the life of the other patient, and it had no good results at all. I have, therefore, not pursued this kind of treatment, and I cannot hear that many other surgeons have added it permanently to their stock of operations.

Cases of retroversion in which there has never been a previous puerperal condition are always the result of some accident or of mere perimetritic inflammation. In the former case they are practically incurable—that is, the displacement can be

remedied, but cannot be permanently corrected. In the latter the use of pessaries is absolutely contra-indicated by the presence of adhesions, and anyone who employs them in such cases will produce much trouble for himself. Schultz and other writers speak in a light-hearted way of being able to overcome these adhesions by pressure and tearing, but my experience is that it is no such easy matter. Besides, the adhesions involve the tubes and ovaries to such an extent that these cases do not really belong to the category of uterine disease at all, but to that of disease of the uterine appendages, under which head the further discussion of them will be found (exanthematic perimetritis).

Subinvolution occasionally causes a pathological anteversion, but rarely, and when it occurs it is a very troublesome condition. I have seen some three or four cases, and have utterly failed to apply a pessary that was of any benefit. I sent one case to an enthusiastic advocate of pessaries, and he was no more successful than I was. In fact, I entirely agree with Schultz's statement that it is perfectly impossible to rectify anteversion or anteflexion without an intra-uterine stem, and with these dangerous implements I do not care to meddle. The best remedies are ergot and the salts of potash, and finally the curette and cautery.

It will be seen, therefore, that my views on uterine displacements have at least the merit of simplicity, and I am sure they have the still greater advantage of safety, for it is quite as important to avoid doing harm as to strive to do one's patient good; and the popular views on uterine displacements, combined with their routine treatment by pessaries, has of late years made me many times wish that pessaries had never been invented. Retroversion is occasionally associated with early pregnancy, but only, I think, where a backward displacement has previously existed; and, in order to dismiss this subject, I may briefly say that usually this displacement rectifies itself as the pregnancy advances, and, if proper care be taken after the labour, the pregnancy may be made to cure the displacement. Sometimes, however, the displacement causes abortion, and this may be frequently repeated. In one extraordinary case which I attended with Mr. Langley Browne, of West Bromwich, retroversion of an extreme character continued till the end of pregnancy. Mr. Browne was called to her and found unmistakable evidences of labour pains, but could not find the os. He telegraphed for me, and before I placed the patient under chloroform I was equally at a loss. The impression at first was that we had to do with a case of extra-uterine pregnancy, and the extreme thinness of the uterine walls favoured this belief. The anæsthetic, however, enabled me to find the os at the top of the immensely elongated vagina, up quite on a level with the umbilicus. By inserting

my finger into it, and aiding the process by my other hand outside, I was able to turn the uterus on its biparietal axis, and Mr. Browne finished the labour by turning, on account of an arm presentation.

The diagnosis of retroversion is easier than that of retroflexion, because in the latter the curve or bend of the uterus may be closely imitated by adherent appendages. Retroversion may, however, be always recognized by placing the forefinger of the right hand in the vagina and that of the left in the rectum. If necessary, the sound may be used, but to the skilled finger it is rarely necessary unless there be some complication. If the uterus is mobile, the cervix, which is pointing forwards, should be pushed backwards, and the misplacement may be so far rectified in this way that the fundus may be felt above the pubis, and in this way the diagnosis may be made certain and the absence of complication verified. The lump behind the cervix which is generally supposed to be characteristic of a retroflected fundus may be imitated by a small tumour of the tube or ovary adherent to the posterior uterine wall. I have seen the normal cervix mistaken for the fundus by an inexperienced finger in the rectum. To assist in the diagnosis the sound may be employed, but it is rarely necessary, and it is a dangerous implement.

General symptoms help us but little in the diagnosis of uterine displacements, further than to direct our attention to the necessity of a manual examination. Persistent pains in the loins, pelvis, or back, painful or frequent micturition, pain on the passage of a motion, mysterious reflex symptoms, or persistent sick headache for which no adequate cause can be found, should always, in a woman, direct attention to the uterus and ovaries. In unmarried women we should of course hesitate as long as possible before making a vaginal examination, but when all general treatment fails, or when the general symptoms can be explained in no other way, our hesitation should cease and the pelvic organs should be examined; for it has been in my experience most extraordinary, as I know it has been in the experience of very many others, how unexpectedly uterine disease has been found to be the source of remote subjective symptoms, and how completely they have yielded to its treatment.

As in the case of displacements of the uterus forwards, so in its diversion backwards we find numerous instances of marked retroversion and retroflexion in which no suffering has been experienced, and where the displacement, therefore, demands no treatment whatever. When, however, treatment is required, its details will be found to differ in almost every case. For the replacement of the organ no kind of pessary will answer in every case. The vaginæ of women differ as much as their

faces, and therefore it is that Simpson's original ring pessary, made of celluloid, will be found far more generally applicable than any other, because its form and size can be so easily and effectually altered. Three or four sizes are needful, varying in character from an inch and three-quarters to three and a half inches. In each case the ring must be bent according to the requirements of the patient, and placed as may be found best. Generally this will be behind the cervix, but occasionally it requires to be placed in front of it; and these details must be attended to with the utmost care, because a patient will not be relieved or cured merely by having a ring placed in her vagina, any more than a broken limb will be properly set by merely having a set of splints placed in bed with it. As curative agents, however, I have not been satisfied with pessaries, and I regret to find the simplicity of their use, aided by the free advertisement of enterprising manufacturers, have extended their use to a surprisingly absurd extent.

I have seen a few cases of latero-flexion, the result apparently of the contraction of some old effusion in the broad ligament, but in none have the symptoms demanded treatment.

In speaking of downward displacements of the uterus, I have confined myself to the use of the terms *prolapse* and *protrusion*; meaning by the former term the descent of the uterus so far that it does not appear outside, and by the latter a continuance of the descent till the cervix appears outside as partial protrusion, or till the whole organ and the structures associated with it appear outside as complete protrusion. One form of prolapse, and even of partial protrusion, I have already mentioned, where the descent is due to a hypertrophic elongation of the cervix, without the normal level of the fundus being greatly or at all interfered with.

Prolapse, or even protrusion, of the uterus, without hypertrophic elongation, may be met with at all ages, for I have seen it in very young children, and I have in my possession a preparation of an immature foetus, given to me by my colleague, Dr. Charles Warden, in which the uterus is completely protruded through the vulva. Such a displacement is always due to a relaxation or elongation of the suspensory ligaments of the uterus, and this stretching may be due to a number of different causes. In by far the greater number of instances it is due to the carelessness of women after their confinements, or even at their menstrual periods. I have, however, seen it due to the pressure of some abdominal tumour, or a collection of ascitic fluid. Thus, in the instance of a girl aged only eighteen, whose case I published in the *Lancet* of October, 1875, there was complete protrusion of the uterus and bladder, due to the pressure of an ovarian tumour; and when I removed the tumour I was able to cure the protrusion by clamping the uterus close up to the wound.

Protrusion of the uterus is a condition comparatively rare in the better ranks of life, but enormously frequent in our hospital clienteles—facts which at once point to its chief cause; and it is most astonishing to find that some women will pass many years of their lives with their pelvic viscera completely extruded, without seeking for any assistance. Prolapse frequently gives rise to no discomfort, whilst in other cases it produces an intolerable sense of weakness and pain, rendering the patient unfit for any active duties. The diagnosis of the condition is of course absolutely simple, and the remedy easily within reach. The greater number of cases might be rendered perfectly comfortable by placing a ring pessary as if for retroflexion, or by the use of one of Simpson's shelf pessaries. But these instruments are, as I have said, by no means safe instruments, and they are apt to create an ulcerative process which may result in a fistulous opening into the bladder or rectum, unless the patient will agree to present herself for inspection at intervals. Hospital patients constantly neglect this, and therefore they are not safe instruments for gratuitous practice. The vulcanite balls, which I have already described in speaking of cystic vaginocoele, are much safer, because they cannot possibly do harm, and they generally can be retained with the assistance of a napkin. For a radical cure, the operation for extending the perinaeum, which I have already described, is by far the best means; but it is useless to perform it on a woman likely again to become pregnant, as parturition will surely undo it.

For complete protrusion the same operation is by far the best treatment, and its results are generally permanent—a statement I cannot make concerning any other plan I have tried. I have cases where the patients have remained quite comfortable for more than ten years.

The uterus is said to have been found extruded as a hernia in the inguinal canal, but I have seen no such displacement.

Inversion of the uterus is an accident of labour in the majority of the instances of its occurrence, though I have seen it as also occurring by the growth of a tumour at the fundus, and by its gradual extrusion dragging the uterus down with it and thus inverting it. It may be partial or complete. It comes under the notice of the surgeon only in cases where it has been neglected or not discovered after labour, or in the exceptional method of its occurrence referred to. Formerly the uniform treatment of this condition was by amputating the displaced organ, either by ligature or the *écraseur*; and even in spite of the almost constant success of reduction by continuous gentle pressure, we see now and then cases of amputation placed on record. If the inversion be of recent date, so that complete involution has not occurred, reduction will be very easy; but even if years have passed since

the inversion occurred, replacement by gentle pressure should be tried, and almost certainly it will be successful. Assuredly, from my most recent experience, I am of opinion that no case of inversion of the uterus, no matter of how long standing, will resist treatment by the continuous elastic pressure properly applied.

The proposal to deal with chronic inversion of the uterus by means of continuous gentle pressure is a very old one, for we find in Boivin and Dujé's book on Diseases of Women that it was very clearly indicated, as well as the means by which it might be accomplished: "Might not pressure from below upwards be also made available for reduction of the inverted uterus? A pessary like that of the cup-and-ball might for this purpose be introduced in the vagina." Sir James Simpson also recommended a similar proceeding, though I cannot find any record of his having employed it. Tyler Smith used an elastic ball pessary successfully, and by this means I have succeeded in reducing an inverted uterus. During the last ten years I have had thirteen cases of chronic inversion of the uterus, and have succeeded in reducing them all but two. In one the patient would not submit to treatment, and in the other I amputated the inverted organ by mistake. It was covered by a mass of cauliflower growth, which had caused the inversion, and therefore the displacement of the uterus was not recognized. The patient made an admirable recovery. Chronic inversion of the uterus is said by some authorities to be either partial or complete. I have never seen any case of partial inversion, and therefore I fancy it must be rare. The diagnosis of either of the conditions presents only one difficulty, and that, of course, is the discrimination of it from polypus. Large numbers of cases are on record where the inverted uterus, uncomplicated by any growth, has been cut off in mistake for a polypus, occasionally with success, but generally with a fatal result; and therefore it is always a matter of importance, in cases of small polypi which in any way, by shape or size, resemble the uterus, to be perfectly certain that an accurate estimate of the nature of the lump is made known before the *écraseur* is applied. When there is no growth to explain the inversion the first point is the history of a labour, and generally such a story will be told as to put the practitioner on his guard—that is the story of the inversion of the uterus then and there, unmistakable. The subsequent history of repeated and uncontrollable hæmorrhage is very characteristic; though cases do occur, as in that I have alluded to in which the patient declined to have the uterus replaced, where is nothing but normal menstruation. The signs by which a differential diagnosis may be made are that a polypus is rarely of the characteristic size and shape of an inverted uterus, being generally globular; the inverted uterus is very sensitive, and a polypus is absolutely insensitive; and

when a sound is in the bladder and a finger in the rectum the absence of the uterus from its normal position may easily be determined. Further, any effort to introduce the sound into the uterus will completely fail when it is inverted, but will easily succeed if the lump be a polypus. In cases of inversion caused by growth the history of labour is of course absent, and the occurrence of hæmorrhage is not peculiar to inversion. The increased and probably irregular size of the inverted organ, and its disguise by growth over its inverted surface, will, as in my own case, almost certainly ensure the possibility of inversion being overlooked. There is this comfort, however, in these cases—that amputation of the inverted and diseased organ is the only treatment likely to be of service. A nodule of myoma might be enucleated and the uterus afterwards replaced, but with the cauliflower growths complete removal is by far the best treatment.

In partial inversion, before involution had occurred, if the finger could be passed into the cervix and round the protruding mass the diagnosis would be easy. After involution was completed the difficulty would be very great, but if the sound could be passed for a limited distance only, all round the tumour, if the tumour itself could not be rotated, as nearly all



FIG. 16.—Tait's Cup Repositors (half of actual size).

polypi can be more or less, if the finger in the rectum and the sound in the bladder revealed a want in the position of the

fundus, and, finally, if this absence was confirmed by bimanual touch under an anaesthetic, the diagnosis would probably be made with exactness. Even if it could not be, an experiment with the cup repositor (smallest size) would soon determine the real state of matters; for if it should be a case of inversion the pessary will replace it, and if it be a polypus it will do no harm.

The method of treatment of inversion of the uterus by continuous elastic pressure has been completely successful in every one of the eleven cases in which I have tried it, and the apparatus employed is extremely simple. A waist-belt is fastened round the patient, and is supplied with stout threads of elastic rubber precisely as for dilatation of the uterus. The largest sized repositor is now applied to the inverted fundus, and just enough pressure applied by the stretched elastic as not to cause pain, the object being to accomplish the reduction very slowly. The threads should be tightened at intervals of four to six hours, and an occasional examination made. So soon as the lip of the cup is found to be quite buried in the cervix, it should be removed and the second-sized cup applied. After a time the third cup replaces the second, and in from twenty-four to thirty-six hours the replacement is accomplished without any constitutional disturbance at all, indeed generally without discomfort.

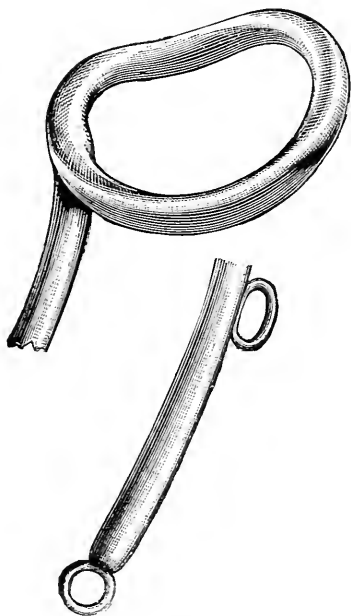


FIG. 17.—Tait's Ring Repositor.

In only one of my cases did these instruments fail to accomplish the reduction. At first I was inclined to attribute this to the straight stem, and therefore I used the curved stems advised by Dr. Aveling, but I did not succeed a bit better. I then came to the conclusion that the inverted peritoneal canal must have been obliterated by adhesions. I had made up my mind to amputate the uterus, when it occurred to me that pressure made by a ring at the cervix might stretch these adhesions. I had an instrument made as shown in the preceding drawing, and by its means I exercised continuous elastic pressure all round at the line of the cervix, having passed the ring over the inverted uterus. This plan made a distinct impression, but not enough. I then applied the cup repositor to the fundus as well, using two belts and two sets of elastic threads, and had the satisfaction of reducing the displacement in about thirty hours' use of the combination. I am now quite satisfied that no case of chronic inversion of the uterus, uncomplicated by growth, will resist this treatment.

Menstrual Derangements.—As a rule, menstruation begins in this country about the age of fourteen, though it may appear earlier, or be deferred for two or even three years without inconvenience. But in the menstrual history of any patient a marked aberration from the ordinary period of the first menstruation is to be looked upon as an indication of the tendency, in one or other direction, to two great classes of uterine disease. Thus a premature appearance of menstruation, especially if associated in the after-history with a too frequent and too abundant flow, is clearly indicative of a condition of congestion of the organs which may lead to a chronic ovaritis or endometritis. On the contrary, a delayed appearance, with subsequent irregularity, infrequency, and scantiness of menstruation, is suggestive of the opposite condition—a want of development of the organs.

Amenorrhœa—that is, the complete absence of anything like menstruation for a lengthened time after the usual moliminal period—is a symptom of a great many conditions, some of which are quite foreign to the purpose of this work, and need hardly be referred to here. The chief of these is a disease the intimate nature of which is quite unknown, and to which many different names have been given, but for which I have adopted the name of “adolescent anæmia,” and under that term have described it in another chapter.

I have become quite satisfied that in these cases the menstrual symptoms are an effect and in no way a cause of the general condition, which is to be easily recognised by the whitish-green colour of the skin of the patient, the absence of

red in the lips and mucous surfaces, and the presence of symptoms of serious disturbance of all the important functions. The most distressing symptoms are breathlessness and singing in the ears. Amenorrhœa may also be indicative of some obstruction to the external appearances of menstruation, such as an atresia of some part of the general canal; or the condition of amenorrhœa may be protracted by impregnation having occurred before the ordinary signs of menstruation have ever become developed. Thus it will be seen that I regard amenorrhœa only as a symptom, and that I strictly limit the application of the term to such cases as those in which there has never been any external manifestation of the monthly discharge. This limitation is demanded by clinical convenience. When menstruation has once occurred, no matter how imperfectly, its very occurrence establishes a fact in the economy of the patient which gives quite a new phase to her case, and fixes a date from which most important conclusions may be drawn in after life. Menstruation does not usually proceed with perfect regularity immediately after its first appearance. It may be suppressed for a few months, appearing at the end of the interval, and occurring afterwards in a normal manner. Perfectly healthy menstruation consists in a flow which occurs at intervals of from twenty-three to twenty-six days, lasting from three to five days, accompanied by various sensations of uneasiness but without positive pain, and resulting in a loss of blood which may vary greatly in amount, but which outside certain limits may be said to be abnormal. How we are to determine what is an abnormal loss cannot be laid down by strict rule, but as nearly all women wear napkins to catch the discharge, the number of these used during the menstrual period will generally be found to give some indication of any excess or insufficiency in the amount. Allowance must of course be made for the different habits of women, for some will discard a diaper when soiled to a much less extent than others will; and as it is very often a matter of the greatest importance to know definitely whether a patient is losing more than she should do or not, in any case of doubt an inspection of the soiled linen should be made. I have generally found that if a woman uses more than four or five diapers in twenty-four hours, or less than three, the discharge is abnormal. The whole number used during the period should not exceed fifteen without the suspicion being entertained that the flow is excessive; and if it does not amount to ten, it is probable that menstruation is scanty.

Amenorrhœa alone is hardly ever a justification for a vaginal examination. Menstrual suppression, on the other hand, is always a reason for considering the necessity of an examination, and for a careful outlook for other signs or symptoms which may justify it.

In any young woman in whom menstruation has been completely established, and has occurred with perfect or considerable regularity, a sudden arrest of the external appearance of the process is to be held at once as an occurrence requiring the gravest attention. It ought never to be pooh-poohed with a placebo, both for the sake of the patient and for the interest of the practitioner. I have known a larger number of instances of medical men damaging their reputations in this way than in any other. The first suspicion is, of course, that the patient is pregnant; but this ought never to be even hinted at till the most positive evidence of it has been obtained, either by the discovery of the rhythmic contractions of the uterus, the sounds of the foetal heart, or indisputable foetal movements. The first-mentioned is the only absolute sign; but sometimes, even when there was no doubt in the mind of the patient or in my own about the pregnancy, I have failed time after time to hear the foetal heart. I have often heard it in the vagina when I have failed elsewhere, and for this exceptional method of examination I have found Dr. Syer Bristowe's globular stethoscope of great service. The greatest care must be taken to be sure that sounds of intestinal gurgling are not mistaken for the foetal heart. This painful mistake was probably the cause of a blunder into which several practitioners fell in the case of a young girl from whom I removed an ovarian tumour, and in whom they declared there was undoubtedly a child. It was with considerable difficulty that I could persuade the aggrieved parents to forego their intention of insisting upon a legal redress for the injury which the statement had inflicted upon their daughter. Foetal movements are very deceptive, and in all cases where there is great doubt, and especially where heavy responsibility rests with the opinion given, they should never be trusted to alone.

Menstrual suppression may also indicate the growth of an ovarian tumour, or the occurrence of a hæmatocele, and both of these may, by careless vaginal examination, be mistaken for an enlarged and pregnant uterus, so that every care should be exercised in such a case.

Dysmenorrhœa, or painful menstruation, is not always to be made the ground of immediate local examination, especially if the pain precedes the appearance of the flow, in which case it is most probably due to tubal disease. If, however, the symptoms resist constitutional treatment, or are so severe as to incapacitate the patient, or are of such a character as to suggest the existence of obstruction to the egress of the fluid, an examination is necessary and should be made. In married women there need hardly ever be any hesitation in suggesting the need for examination; what I have said refers chiefly to young and unmarried women, in whom, for evident reasons, an examination should not be made unless the symptoms justify its necessity, and then it should be insisted upon.

Menorrhagia—by which is meant an excessive loss of blood at intervals which have somewhat the periodicity of menstruation—or metrorrhagia, by which is meant a loss of blood which is either so continuous or so irregular as to cloud the occurrence of the monthly flow—should always be the subject of a local investigation ; and any practitioner who undertakes the treatment of a case where this is a symptom without at least carefully informing the patient of the utter uselessness of any treatment unless with a clear perception of the local conditions, seriously neglects his duty. The causes of menorrhagia or metrorrhagia are considered at length in various chapters of this book.

At the period of the appearance of menstruation, and at its decadence, special dangers await women, all of them due to their sexual functions, though some of them have only an indirect association with the pelvic organs. Thus, on the accession of those feelings of vague uneasiness or positive pain to which the name *molimena* has been given, we frequently find instances in which a dormant tendency to mental disease becomes roused in action ; and acute mania forms one of the risks through which many young women have to pass at the period of puberty. In these cases the greatest distress is sometimes caused by the terrible form taken by the insanity, erotomania ; and I have several times seen girls so afflicted indulge in gestures and language which puzzled us to guess how the patients became acquainted with them, the girls were so young and had been so well brought up. As soon as any symptoms of sexual eccentricity display themselves in a girl at the moliminal period, she must be treated as insane ; and I hold that this view is really the best and safest explanation of many cases of what looks like mere lust, and what is usually and unfortunately punished as a moral offence. It must be borne in mind, as I have already said, that in the descent of the whole scheme of creation the function of reproduction has been the field of the keenest and most unintermitting struggle for existence ; and at the time of the physiological change which enables the young animal to enter upon that dangerous battle-field, the tendency of his or her ancestry is almost sure to evince itself in one or other form, and any error in this direction is to be held as not the fault of the individual, but his or her misfortune. The true preventive consists in what I believe it to be the duty of every parent to give to every child, instruction in the nature and purport of sexual functions, how they are to be used—and how easily they may be abused. If this were done, we should not only diminish sexual diseases, but we should greatly diminish sexual immoralities.

At the climacteric period of life women are subjected to another set of risks, some of which are directly, and others only indirectly, associated with their sexual functions. The

general symptoms of climacteria are often severe enough to constitute a disease, even though they may have only a subjective existence. Most women cease to menstruate between the ages of forty-five to forty-eight, though they may have the change earlier, as a result of certain conditions elsewhere described; or it may be delayed for some years by causes of an opposite description. The general symptoms which accompany the change include headache, nervous depression, flushes of heat and chills, irregular and sometimes profuse menstruation, pains in the back, dyspepsia, or other functional disturbance. Very few women pass the climacteric period without more or less suffering, and in some cases permanent damage is encountered. The nervous symptoms may be so severe as to result in mental derangement, and this often takes the form of incurable dementia. I have also noticed in several cases a specific form of climacteric epileptic mania, which I believe to be entirely irremediable. But perhaps the most common, and I really think the most terrible form of mental disease which is developed at the climacteric is a tendency to the abuse of alcohol. Here let me say in defence of women, and in opposition to much clap-trap which it has been of late the fashion to write about their drinking, that after a considerable experience of women who have given themselves up to the habit of intemperance, I have never yet had one as a patient in whom there was not some strong inducement to the indulgence. Women are always secret drinkers, in this differing greatly from men; for when a woman does give way to intemperance, she knows how much more she has to lose than a man has, and how much more misery she will bring upon others. The cause will generally be found to exist in some physical suffering or in some mental distress from which she seeks relief, or in a form of climacteric insanity. I have cured many women addicted to alcohol and other narcotics by relieving them of the sufferings due to diseases of the uterine appendages. I have known many driven to the use of an alcoholic anæsthetic by the neglect or infidelity of their husbands; but by far the larger number of these unfortunates have adopted the habit late in life as a relief from their climacteric discomfort. These are cases of insanity, and it would be a wise law which would enable us to place them in seclusion till the time of their trial was over. I do not believe that women ever take to drink from the mere love of it or from convivial indulgence, as men do.

When the inner secrets of the mind of a climacteric patient, suffering from such depression as is likely to produce intemperance, can be reached, some delusion will generally be discovered which will guide us in the treatment. I cannot here enter into this subject without trenching on the province of the alienist,

but I could give many illustrations of it. I have found women believing themselves pregnant by men not their husbands; but one of the most terrible was a case in which the poor woman believed that she was pregnant by a dog. We removed her from all home associations without putting her under restraint, carefully regulated her mental occupation, and in about twelve months the delusion left her, and she gave up her intemperate habits completely. The most essential treatment in all these cases is removal from all the former associations of the patient.

After the cessation of menstruation, and sometimes as an indication of the approaching change, many women become very stout; and as this is first brought under their notice by a change in their figure, they are often very unnecessarily alarmed by it. If menstruation has ceased, they often believe that they are pregnant; or, now that tumours are spoken of so much by the public, this dreadful vision, or that of dropsy, is suggested at once, and they appeal for surgical assistance. It is often very difficult to convince them that there is nothing but ordinary fat, indeed in some of these cases the appearance of "tumour" is so deceptive that I have difficulty every now and then in persuading the medical attendants that climacteric fat is all that ails their patients. If the arrest of menstruation is sudden, the rapid deposit of fat on the omentum is sometimes astonishing, while the patient appears really thin at all other parts of the body. In a few months, however, a rearrangement of the fat takes place, it disappears to a large extent from the omentum, and is spread over the subcutaneous tissue of the body, the patient then obtaining relief from her discomfort, and gradually putting on the "buxom" appearance of healthy post-climacteric life. Looking over certain lists of abdominal operations which have been published leaves no doubt whatever that some of these cases have been operated on in mistake for ovarian tumours, and are recorded as "lipomata."

For the relief of nearly all the subjective symptoms of the climacteric period I know nothing better than the use of an occasional drastic purgative, and removal from home at frequent intervals. I have seen immense relief from small bleedings, but this is a remedy not to be used indiscriminately. When objective symptoms or signs are found to depend upon definite pathological conditions, such as chronic metritis, &c., they must be treated on the principles discussed elsewhere.

Congenital absence of the uterus has already been referred to, and is generally associated with incomplete development of the vagina, the latter organ being represented only by a short cul-de-sac. This condition does not necessarily interfere with marital functions.

The term "infantile uterus" was devised by Simpson to mean insufficient development of the organ, and it is very descriptive, and a most useful term, though it cannot be regarded as quite exact—in this respect resembling most of our nomenclature. An effort is being made by German authority to replace it by the word "puerile"—regardless of the sex of the uterus. There is a strong objection to such a use of this word that it has already a definite meaning in English, one so strictly limited that to attach another to it will be provocative of confusion. If we change the word, let it be into "puellar;" but I do not see any advantage in such an introduction. We do not, of course, mean by the word "infantile" that the uterus so affected remains of a size such as seen in infants, but that it partakes more or less of an arrest of development, so that its function of menstruation may be much interfered with or wholly prevented, and its function of gestation rendered wholly impossible. This arrest of growth may take place at any time, so that we may have a full-grown and well-developed woman with a uterus no larger relatively than it was at birth, or we may have merely the indication of a conical cervix and an antelected fundus, showing a symmetrical, and therefore incomplete, development of the organ; and between these two extremes there run infinite gradations. Of the one extreme I have seen a remarkable instance in a young lady who, for many years, has been in a condition of semi-seclusion on the ground that her sex was doubtful, and that she was either an incomplete male or a hermaphrodite. She had been examined, or at least was said to have been examined, by several practitioners, who all gave this opinion. The condition I found, however, was that the external organs were perfect, and that there was a perfectly developed vagina; but the uterus was represented by an organ no larger than it probably was at birth. Under ether, bimanual examination determined this with perfect ease; and now that the question of her sex is set at rest, the patient has assumed her proper place in society. She has never menstruated, and probably never will, but she is in a perfectly nubile condition, though I do not think there is the least chance of her becoming pregnant.

Such examples as this are not common, while, on the other hand, a slight degree of want of development of the uterus, sufficient to give rise to troublesome menstruation and to be a bar to pregnancy, is quite a common condition—so common that I almost think I might say it constitutes one half of my private practice in chambers, and a very large proportion of my out-patient hospital practice consists of such cases of arrest of development. I have a strong and growing belief that the exanthematic diseases of childhood are largely to be charged with this as a result. The diagnosis of the condition is very simple. In the first place,

the history is very characteristic, for in answer to a question as to the age at which menstruation began it will always be found to be late in its appearance, the term being deferred just in proportion to the degree of defect. Many of the very pronounced cases are brought to me at seventeen or eighteen years of age, and even later, because menstruation has never appeared, the patients as a rule suffering little in consequence.

In such cases I strongly urge the parents and the patients to be content and to do nothing, advice which I rarely get them to follow, though I am sure it is by far the wisest course. They generally buy some quackish book on "sterility," and suffer in consequence. In the most pronounced cases menstruation never appears at all, and the patients never suffer; in fact, they lead lives which I should envy, if I were a woman, and knew as much about the pelvic ailments of women as I do now.

In the less pronounced cases menstruation appears late, is at first irregular and deficient, becomes regular and more efficient for a few years, and disappears often before thirty, causing suffering, unendurable agony, during the whole time of its existence. When such women marry they are sterile in the great majority of instances. When they are fortunate enough to become pregnant the organs are of coarse developed in the process of gestation, and their subsequent histories become much more satisfactory. In a few of the less pronounced cases we find division of the cervix, and even the use of intra-uterine stems, give immense relief, and even sometimes secure the occurrence of pregnancy. But looking back on my experience of pelvic surgery for the last fifteen years, I am entirely satisfied that it would have been far better for the world if neither of these proceedings had ever been heard of, especially the use of intra-uterine stems. Mere division of the cervix is a harmless proceeding, but as its results cannot be maintained without the subsequent use of a stem, the two proceedings are involved in the same condemnation. An occasional dilatation of the uterus with my conical dilator is far safer, and therefore my mechanical treatment of these cases is now practically confined to that method, and I have found it far safer and quite as satisfactory: that is, I get temporary relief, and occasionally a pregnancy follows the treatment. Simpson introduced the galvanic stem pessary in the treatment of these cases, and for a long time I followed his practice with delight at the results, for the patients were relieved most effectually in a large proportion of the cases, and development of the uterus was brought about without doubt. But a few inexplicable deaths, following months and years after the treatment, were made clear by one post-mortem where a ruptured pyosalpinx told me what mischief I had done, and I put galvanic stems away for ever. This conclusion was

emphasized by the discovery of the fact that even this dangerous treatment had only temporary and not permanent effects. In fact, when I began to trace some of my best-known cases, two or three years after the treatment, I found that they were worse than when I first treated them; and now my list of abdominal sections contains quite a sad number of instances in which my own treatment was the cause of the need of this serious proceeding, and it also contains an array of cases, now to be numbered by scores, where the same result followed the use of galvanic and stem pessaries, generally at the hands of others. A very remarkable paper has recently been written on the "Infantile Uterus" by my former pupil, Dr. Arthur Johnstone, of Danville, Kentucky; and, as in everything written by that brilliant young gynecologist, an immense flood of light is thrown on the subject of his labour. Taken in conjunction with another work of his, on the function and processes in the uterus in menstruation, the whole question is reduced to a comprehensible simplicity. He shows, first of all, that the cervix and body of the uterus have not merely an anatomical discrimination, but have distinctions of functions and of pathological change of the most marked and striking kind. That this simple fact should not have been recognized long ago is most surprising, seeing how different their relations and functions are merely in the matter of pregnancy, and that myoma is entirely a disease of the fundus practically limited to menstrual life, whilst cancer is practically a disease of the cervix, limited to no period of life. Let me give his views in his own clear and distinct fashion (Trans. Amer. Gynecological Society, 1888):—

"The relation of the cervix to the body, as I now believe it, is almost that of the pylorus to the stomach. It not only supports and protects the cavity from undue intrusion, but retains its contents, and assists at the proper time in its expulsion. This idea is borne out physiologically, not only by a different blood supply, a different nerve supply, a difference in the direction and quality of its muscular fibre, but also by a most radical difference in the mucous membrane. The lining of the cervix, histologically, is not far removed from that of the air-passages. Its dense layers of ciliated epithelium lying over an ordinary loose areolar tissue, in which are embedded large numbers of mucous glands, remind one very forcibly of the turbinated region. Were it not for the size of the epithelial cells, one could be very easily deceived into thinking the specimen came from the trachea or the Eustachian tube. In other words, one who is familiar with this mucous membrane can see at a glance that its only function is to secrete defensive fluids when needed—the most striking instance of which is the mucous plug of pregnancy.

"On its divergence from the endometrium of the body hangs the principal point of this paper, but, before we come to it, let us see what mischief arrests of development of the cervix alone may cause.

"The clinical experience of the present day confirms the long-believed idea that, with a perfectly normal body, we frequently do have too small a cervix. As I have already shown this to be a distinct organ from the fundus, the most natural supposition is that the cause of this disproportion is the want of growth in the cervix itself.

"How common is it to find a perfectly normal adult body forcing its secretion through a childish neck. And how fortunate we are when this already diminutive organ is found before it has given way to pathological process which its diminished calibre has excited.

"It is my belief that a very large proportion, if not all, so-called congenital flexions are remotely due to this early stoppage in the growth of the guardian of the uterine cavity. It is the very large number of cases in which there is a cervical arrest that has given the uterine dilator its deserved popularity. For I believe that the prime cause of that form of dysmenorrhœa which this instrument cures is due to nothing but an arrest in the growth of the canal. The various divergences of this canal may be caused either by the pressure of the fully-grown organ above attempting to force its secretion through too small an opening, and thus distorting it, or else the disproportionate weight of the fully-developed body crushes down and bends the too weak support with which Nature has furnished it. Had there been no premature labours nor infantile uteri, I do not believe that laceration of the cervix would have ever played much of a rôle in the support of the practitioner. My own experience is in the line with that I have heard expressed by some others, and that is, that a surprisingly large proportion of torn cervices gives a previous history of symptoms which point to a greater or less arrest in their early development.

"Let this development be arrested at any point before it reaches full maturity, and we at once have one of those conditions commonly known as the infantile uterus. The proof of this I have now in my possession in the shape of a two-inch uterus, which was removed from the body of an unusually large, fine-looking woman of thirty-nine years. She always had great irregularity and difficulty in menstruating. It was one of those queer and formerly inexplicable cases which sometimes would have an interval of several years' total cessation, one intermission being as long as five years; at other times she would be comparatively regular for a year or so. The microscope showed her endometrium to be between the conditions, presented in my paper on the menstrual organ, of eleven and thirteen. The poor creature had

gone through life trying to menstruate with an endometrium not far removed from the condition of the pig's, but with one great exception—that she had little or no lymphatic stream with which to relieve the tension.

“With tough, hard tissues, is it any wonder that the menstrual stream should find difficulty in working its way through its interstices? Or is it surprising that the tension which its passage must cause is the origin of the most agonising pain? Or is it more than we could expect, when we look at the low grade of development of its corpuscular elements, to find that it is almost impossible for them to be converted into the myeloid state, which is necessary to the formation of the placenta?

“Thus we see why these poor women, though with perfectly healthy ovaries, and with no barrier to the fertilization of the ova, are still doomed to perpetual sterility. The remote causes of this arrest are many, and too obscure for me to attempt to detail them now. The first and most striking of all are traumatic injuries.

“I once saw a splendidly-developed married woman whose uterus was not larger than a thimble, which had been caused by a hook from the horn of a bull in the vagina when only seven years old. She had had some attempts at menstruation, and frequently had the Stevenson antimenstrual pressure, but always in an erratic, irregular sort of way. The study of the causes of the artificial arrest of menstruation, I think, will throw light on this subject.

“In making some pathological investigations of specimens which came from the second attempt to bring on the menopause, I found in one case both tubes and ovaries had formerly been removed for this purpose, but, having failed, I assisted Mr. Lawson Tait in a supravaginal hysterectomy.

“In the specimen thus procured I found that quite long stumps to the Fallopian tubes had been left at the first operation, and in the free surface of our second incision I found the cut ends of quite large nerve-trunks, which had escaped the first operation. The second, however, was a perfect success, both as regards the immediate and secondary results.

“This led me to study more closely the sympathetic plexus of the broad ligament, and I found that, besides quite a large number of filaments, which accompany the Fallopian tube and the uterine branch of the spermatic artery, there is one particularly large trunk which comes up at a very acute angle to the body from deep down in the base of the broad ligament, and enters the uterine cornu just underneath the angle of the Fallopian tube. This nerve lies so close to the body that, if the operator is not extremely careful to extirpate the whole of the Fallopian tube, he is very apt to miss it. This I believe is the track through which the endometrium receives its physiological orders, and that section of this nerve

does for the endometrium exactly what the section of the chorda tympani does for the submaxillary gland.

"I saw, in connection with Mr. Tait, another most striking case in support of this idea. The attempt at an artificial menopause had been made by an Edinburgh surgeon, but the patient came with the report that only *one* tube and ovary could be removed.

"At the second operation no trace could be found of anything that looked like a tube or ovary on the right side. As she had been made desperate by her sufferings, she urged on Mr. Tait the necessity for relief at any risk, and he accordingly removed the uterus at the internal os. I took the specimen, and after carefully freezing it, and examining every section from the margin of the endometrium to the peritoneal periphery, the only attempt at a Fallopian tube I could find was a slightly exaggerated development of the uterine follicles in the right cornu. Although she had one or two slight attempts at menstruation, she subsequently quieted down, and got permanent relief from her old trouble.

"The first operation had completely isolated the endometrium from its nerve-supply on the left side, but, in spite of the fact that the tube and ovary of the right side had never been developed, still the nerve-plexus kept up its control of the endometrium until completely severed by the second operation. Thus I think we will be safe in saying that it is not the removal of the ovary, or the removal of the tube itself, that brings on the change of life, but that it is the neurotomy which the ablation of these organs necessitates which completely isolates the endometrium, and leaves it like the lower limb after the section of the great sciatic.

"This being the case, the production of the arrest of the childish or adolescent growth of the endometrium is most apt to be brought on by an interference with its nerve-supply, just as we commonly see it in the acute myelitis of the infantile paralysis.

"Since the recent elaboration of the tubal and broad ligament disease, from their exposed position, we can see how easily the branches of the sympathetic, running into the uterus, might be damaged by some of the many conflagrations to which this region is subject.

"How often these inflammations occur in children is almost impossible to say, for, like the localized acute myelitis already referred to, the disturbances of an acute neuritis are so slight as frequently to pass unnoticed. So we need not be surprised at finding its only trace in an interference with the trophic centres, like those referred to in the spinal cord, and that result in arrested growth.

"Thus we have additional strength added to the material authority with which we have always tried to combat the recklessness of girlhood.

"It seems to me that he who searches out the remote causes for this deformity must take a lesson from our friends the orthopedists, and thoroughly investigate the nervous supply of the foetal home.

"In the management of these cases I have almost nothing new to present. Our ability to assist the development of some of these grades of arrest has been thoroughly tested by the use of the intra-uterine stem, and the various modes of applying electricity.

"It seems that some of the slightest degrees do get a certain amount of benefit from them, but, like the subject from which I have already drawn so many illustrations—infantile paralysis—the vast bulk result in disappointing failure, which, if our idea of their true pathology is correct, we could not expect much else.

"So far as I know, there is but one point in their management over which there is now much discussion, and that is the anticipation of the change of life. For the vast bulk of corporeal deficiencies, I would say most unhesitatingly *No!* but there is a small proportion, whether from the uterus (the natural pelvic sewer) failing to relieve the monthly engorgement, or from what other cause I cannot tell, in which the ovaries, in spite of the use of the uterine dilator, insist on remaining enlarged and extremely tender, thus making life a burden.

"In such cases, that are already as sterile as though they had never passed ten years of age, why may we not relieve them of this awful weight and return them to useful citizenship, and, if not mothers, at least make them happy companions?

"But in the selection of these cases great care must be exercised."

Dr. Johnstone sums up his views as follows; and I can only say that on the one hand they completely explain to me the facts of the "infantile uterus," and I entirely endorse the conclusions for treatment at which he arrives:—

"1. The uterus is not only an entirely independent organ, but it embraces two parts whose functions are entirely separate, and we have arrests in the growth of either or both.

"2. The growth of the cervix is much oftener interfered with than that of the body.

"3. Congenital flexions are largely due to this arrest.

"4. The arrested growth of the body nearly always means an interference with the proper development of the endometrium.

"5. This immaturity of the endometrium prevents its progress to the myeloid state necessary to the formation of the placenta, which means permanent sterility.

"6. This interference is most probably due to some damage to the pelvic sympathetic.

"7. Where there is marked diminution in the body, the stretching of the neck is apt to result in little if any good.

"8. When life has become a burden that is clearly due to an arrested development, the menopause should be hastened, but not until we are are sure nothing else can relieve."

I can only further say that in the extreme case referred to in the last paragraph the decision as to the acceptance of the "last resort," the removal of the uterine appendages, will be as much influenced by the social position of the patient as by the degree of defect, perhaps more. Thus, if we take two sets of cases, one of each occurring in well-to-do patients, who can command perfect rest and all the little luxuries which go far towards the relief pain; and one of each, on the other hand, occurring in a domestic servant who is obliged to earn her livelihood, this fact will be obvious.

Suppose that the first of each set is a case where the uterus is almost absent, yet where the uterine appendages can be felt of normal, or almost of abnormal size, where menstruation has never occurred, yet where agonizing efforts are made at it every month. Nothing can be done in such a case but to remove the uterine appendages, and if this is done the relief is immediate and complete; and I have now had quite a number of such cases in all ranks of life, and they have constituted a strong reason for my belief that the tubes, or some nerve mechanism in association with them, are largely responsible for the initiation of the phenomena of menstruation. But to come to the other group of two cases: they have both the same degree of insufficient development, in both the menstruation has been delayed, is irregular, insufficient, and horribly painful; but one is a well-to-do patient and the other is a housemaid. Practically, the well-to-do patient may not need to have the appendages removed, whilst the housemaid will. She will tell you that she cannot do her work for at least one week in every five or six, and that therefore she cannot keep her places, and cannot earn her living. Such patients, in my experience, hail with delight the prospect of easy and permanent relief, and they are (and remain) immensely grateful for it. As these cases are always uncomplicated by adhesions and other trouble, recovery from the operation has been (in my experience) *absolutely* uniform, and therefore the argument of risk hardly exists against the operation. Still, Dr. Johnstone's caution that the cases must be carefully selected deserves the most emphatic support.

Bifid uterus is merely a retention of an early phase of the development through which the organ passes, and is one of the many reversions of type of structure which prove Darwin's proposition concerning the descent of man. It is by no means an uncommon malformation, and varies in extent. Thus the most common variety is the retention of that form of the uterus which the human fœtus presents at the third month, when the tubal division is marked as far down as the internal os. In a series of

transverse sections of an earlier human fœtus, one under five centimetres in length, the formation of the uterus and its tubes, and also of the vagina, will be seen taking place from the changes in Müller's ducts. The two excretory ducts of the Wolffian bodies, or Gartner's canals, diminish in size, though always remaining large enough to be found in the adult, and Müller's ducts enlarge and turn inwards and in front of Gartner's canals, at about the level of the last lumbar vertebra. They are then seen to unite to form one tube, then again they separate and again unite, so as to leave at last a common orifice. In a large number of animals, however, they do not form the first coalescence, so that the uterus remains permanently bifid. As a rule, in the human uterus the second separation is destroyed, so that the cavity is single in after life; but in some cases the first coalescence does not take place, so that the uterus remains bifid and the vagina is single; whilst in others the second coalescence may not be formed whilst the first is, so that the vagina is double and the uterus single. Again, there may be no coalescence at all, so that the two genital tubes remain separate till they open in the short sinus urogenitalis of the human subject, which is formed only by the labia minora, a condition which may be said to exist in the batrachians. It is a very significant fact that these malformations occur in the higher animals as well as in women.

The clinical importance of these deformities lies chiefly in the possibility of kolpostasis in one uterus, whilst menstruation is free from the other. Gustav Simon narrates such a case. Pregnancy may also occur in one uterus, whilst the examination of the other may lead to a suspicion of extra-uterine gestation, as has happened in my own practice.

The rarest form is clearly that in which the first coalescence of the primordial ducts does not occur, and when they remain single right down to the vestibule, which ideally forms the true sinus urogenitalis in the human being. I have seen two or three such cases. A recent writer on teratology, said to be the greatest living authority on the subject, has fallen into the ludicrous error of supposing that such cases are analogous to the celebrated case of the Portuguese boy (described at length by Dr. Handyside, of Edinburgh; *Lancet*, 1863), where there were two sets of genitals. Such a case is one of fusion of two embryos, and not in any sense one of arrest of development.

When the duplication of the organs is confined to the uterus—and I can imagine the same thing to be true even when the vagina is in duplicate—trouble may arise in the case of impregnation, by rupture of the uterus. This of course must not be confused in any way with "ectopic pregnancy," which is described at length in a later chapter, because so long as the pregnancy is in a uterine cavity of any kind it cannot be

regarded as being "out of place." It is, however, not difficult to imagine that a uterus defective in development so as to be in duplicate, may be so defective in development as to be, like the Fallopian tube, incapable of expansion to meet the requirements of a growing ovum, and to rupture in the process. As a matter of fact, thanks to the interesting research of my old master, and the present distinguished Professor of Anatomy in the University of Edinburgh, Sir William Turner, we have such a case actually on record, published in the *Edinburgh Medical Journal* for May, 1866:—

"Uterus bicornis unicollis. The left horn rudimentary and pregnant. Rupture of the left horn, and escape of the fetus into the cavity of the peritoneum. In the month of May, 1865, I received for examination from Professor Sir James Y. Simpson a preparation consisting of a uterus and appendages, with the vagina and bladder attached, which had been sent to that gentleman by Dr. Brotherston, of Alloa. An inspection of the preparation soon satisfied me that it was one of much interest, and I requested Dr. Brotherston to furnish me with some of the particulars of the case, with which request he has very kindly complied. His account is as follows:—"I was called on the morning of the 11th of May to visit C. G., about twenty years of age, who had just been taken suddenly ill. I found her lying in bed with her clothes on. She was pulseless, very pallid, and drawing heavy sighs. She complained of sickness, swimming in the head, and ringing in the ears. On examining the abdomen I could not discover anything unnatural, but there was slight pain on pressure. I ordered her brandy and warm water, with a large sinapism to the abdomen. She did not retain the brandy, but vomited it almost immediately. I examined the os uteri, and found it a little relaxed. There was no vaginal discharge. I gave her more brandy and water and left her. I saw her again about half-past nine, and found no improvement in her symptoms; if anything, she appeared weaker, and was evidently sinking. Dr. Duncanson kindly saw her with me, but she died about noon the same day. By order of the procurator-fiscal a post-mortem examination was made by Dr. Duncanson and myself. The body presented nothing unusual externally. The scalp and pericranium were blanched, but the brain, with its membranes, and the thoracic viscera were all in a healthy condition. The cavity of the abdomen was next examined, and found to contain a large quantity of blood, to the extent of four and a half pounds. This blood, the source of which was not at first apparent, we carefully removed, and a fetus was discovered lying in the cavity of the peritoneum, which had apparently reached the period of three months. The

fœtus was enveloped in its membranes, which were unruptured. The uterus itself was found to be a little enlarged, but empty, and displaced to the right side by the pressure of the fœtus. Death had evidently been occasioned by hæmorrhage, due to rupture and escape of the fœtus into the cavity of the peritoneum.'

"A careful consideration of the anatomical characters of the preparation led me to form the conclusion that I had before me one of those interesting cases of malformation of the uterus in which the primary or embryonic subdivision of the organ into two distinct cornua had remained as a persistent condition in adult life. One of the cornua—viz., the left—not so fully developed as the other, was impregnated, and the hæmorrhage attendant on the rupture of this horn had evidently been the cause of the death of the patient. That this was the nature of the preparation may be gathered from the following description:—

"Connected in the usual manner with the upper end of the vagina (*k*) was the cervix uteri, which was continued into a somewhat ovoid-shaped organ (*a*), looking at first sight like

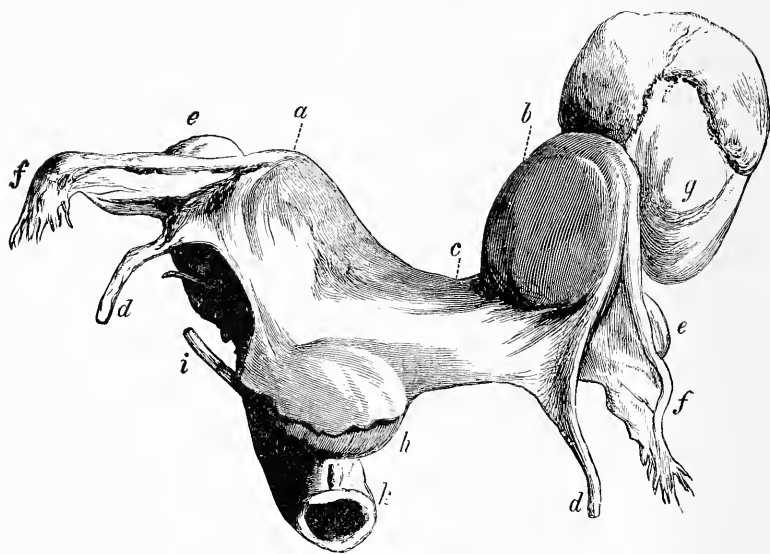


FIG. 18.

the body of the uterus, but which a close examination showed to be not the entire organ, but only the right cornu of a two-horned uterus. For, instead of lying in the same line as the vagina and cervix, it inclined obliquely upwards and to the right, and terminated superiorly in a rounded end. It was

invested by peritoneum anteriorly, posteriorly, and on the left side, whilst from the right side the membrane passed away from it, forming the folds of the right broad ligament. The left margin was convex and free. The extreme length from the os externum to the apex of this horn was nearly four inches, whilst the greatest length of the cornu was about two inches. The right round ligament (*d*), Fallopian tube (*f*), and ovary (*e*), with its ligament, were connected to the apex of this horn. Their relation to each other at their points of attachment was as in a well-formed uterus. The Fallopian tube, including its fimbriae, was four-and-three-quarter inches long. Air blown in at the the fimbriated end entered the cavity of the cornu. The right round ligament arose from the cornu by a broad expanded portion, some of the fibres of which extended as far as the junction of the horn with the cervix. The organ of Rosenmüller was well seen in the ovario-tubal fold of peritoneum. The walls of this uterine horn were thicker than those of the impregnated uterus, and the cavity contained a thick and firm decidua, but no foetus. The cervix was filled by a plug of tenacious mucus. The vagina, os, and cervix were single. The cavity of the right cornu was continuous with the cervical canal. The ovary was flattened on both its surfaces, and from the anterior a small pea-like pedunculated tumour projected. It contained no corpus luteum, but faint traces of old cicatrices were seen on its outer surface.

“Springing at almost a right angle from the left side of the right uterine cornu, close to its place of junction with the cervix, was a flattened band (*c*), which acted as a sort of foot-stalk of attachment for the dilated part of the left cornu, and may, therefore, be appropriately called the pedicle. This band extended upwards and to the left for somewhat more than one inch and a half, and then became continuous with, or rather expanded into, the dilated portion of the left uterine cornu (*b*). The pedicle measured one inch and a quarter in circumference. It was invested by peritoneum, which was continuous, on the one hand with the peritoneum covering the left, on the other with that covering the right uterine cornu and bladder. When this membrane was removed the pedicle was found to be principally composed of muscular fasciculi, but a number of dilated bloodvessels, both arteries and veins, ran along it to the dilated part of the left horn. This horn was somewhat pyriform in shape; its circumference at its widest part was about nine inches. Along the outer and posterior part was a rupture three inches long, through which a foetus, invested by its membranes, together with a vascular placenta-like mass, was extruded. To the proper apex of this horn the round ligament (*d*), Fallopian tube (*f*), ovarian ligament, and

ovary (*e*) of the left side, possessing their normal relations to each other, were attached. The uterine end of the tube was about three-and-a-half inches from the spot where the pedicle expanded into the cornu. The Fallopian tube, measured from its place of attachment external to the dilatation, was, including its fimbriæ, five inches long. Air blown into its fimbriated end readily entered the cornu. The organ of Rosenmüller could be plainly seen in the ovario-tubal peritoneal fold; a cyst the size of a small hazel-nut, apparently a dilatation of one of its tubules, was connected to the outer end of this organ. The anterior surface of the left ovary was flattened, but the posterior presented a well-marked bulging at its outer part, which, on section, was found to be the seat of a corpus luteum. The ovary exhibited a cicatrized appearance externally. The round ligament was expanded at its origin, and extended from close to the Fallopian tube down to the pedicle. The wall of the left cornu was muscular, like that of a pregnant uterus, and at the place of rupture the placenta could be seen partially adherent to its inner surface. The pedicle was examined very minutely to see if any canal connecting the cavity of the impregnated horn with that of the right horn, or the cervix, or vagina, could be seen, but none could be detected, although in the course of the examination the muscular fasciculi of which the pedicle was composed were dissected from each other; neither could any orifice at either of the extremities of the pedicle be detected."

It is of remarkable interest that in this case—the most clearly substantiated of its kind in the whole literature of abnormal pregnancy—the rupture took place about the same period (twelfth week) beyond which tubal pregnancy rarely, if ever, is found to extend, and that the method of death was identically that of tubal rupture.

In his paper Sir William Turner suggests that such a case, on hasty inspection, might be confounded with a tubal pregnancy, and he seems to think such confusion has not unfrequently occurred. In a letter to me he suggests that possibly some of my cases published as tubal pregnancies (at the time of rupture) might have been really pregnancies in a horn of the womb. There is one reason, however, against this supposition which is conclusive to my mind, and that is the uniform appearance, at the point of division of the sac, of the characteristic "mamilla." This is caused by the unequal retraction of the two coats of the tube, the muscular coat contracting much, and the mucous coat contracting little, so that the latter is seen to project, like the nipple of the breast, at the point of cutting. This always occurs when a living Fallopian tube is divided, and is perfectly distinctive. Still, I am not at all disposed to dispute Sir William's suggestion that occasional cornual

pregnancies may be mistaken for such occurrences in the tube, but I think it will be very exceptional, for we now know that tubal pregnancy is very common and bifid uterus is rare, and I fancy that pregnancy in a bifid uterus must be very exceptional indeed. The comfort is that, so far as their surgical treatment is concerned, there will be no difference at all, as it seems to be uniformly characteristic of cornual pregnancy that there is a well-developed pedicle. Sir William gives some very concise directions by which a discrimination may be made, and they are so valuable that I must reproduce them:—"In order to make this distinction the structures to which the attention should be specially directed are the round ligament and the Fallopian tube of the impregnated side, and their relative position and place of origin should be carefully determined. In a normal uterus the round ligament, as is well known, springs from the upper angle of the uterus, immediately in front of the Fallopian tube. If the pregnancy be tubal the round ligament will, as a matter of course, be found attached to the body of the womb on the inner or uterine side of the dilated sac containing the embryo; if, on the other hand, the pregnancy be cornual, then the point of attachment of the round ligament will be on the outer side of the dilated sac in which the fœtus is situated. In both the specimens I have just recorded the latter relation was the one observed. In tubal pregnancies, also, the length of the Fallopian tube on the impregnated side, external to the dilatation, is necessarily less than that of the entire extent of the unimpregnated tube, and the diminution in length is more strongly marked the nearer the sac lies to the fimbriated extremity. In cornual pregnancies, on the other hand, no diminution in the length of the tube on the impregnated side occurs; nay, as both these cases show, the tube on that side external to the embryo-containing sac may even be longer than that on the side which is unimpregnated."

A second case recorded in Sir William Turner's paper shows clearly that cornual pregnancy may go on to the full term, that labour may be ineffectual to expel the child, and that the fœtus may die in consequence, and settle down and remain in situ as a pelvic tumour, just as I show in the case of pregnancy in the broad ligament (*vide Postea*). The phenomena of the two conditions are curiously parallel, for we have what is really a false labour, and diminution of the size of the abdomen by the absorption of the liquor amnii after the death of the child:—

"*Uterus bicornis unicollis. The left horn rudimentary and pregnant. Retention of the fœtus after the full period of utero-gestation.* The specimen had been sent to Sir James Y. Simpson by Dr. Scott, of Dumfries, and from the latter gentleman the following

history has been obtained:—‘I was called on to attend Mrs. M’C., æt. 35, a married woman, who was stated to be in severe labour, and at her full time. On examination I found the os uteri low down in the vagina, and I then could easily find the uterus of a natural size and unimpregnated. There was an enlargement of the abdomen extending a little to the left side, and nearly the same size and shape as a uterus, containing a foetus at the full period of utero-gestation. The foetal heart was easily heard, and the motions of the child were strong. The pains were very severe, and complicated with convulsions for a whole day, in spite of a free use of chloroform, which certainly modified them. The pains continued for several days, and then the patient began to go about as usual, to the astonishment of her friends and neighbours. The enlargement of the abdomen became gradually less, so that at the time of her death (which took place from phthisis, six months after the date of the supposed labour) it was not more than one-third of its original size when I first saw her. The parts, including the empty uterus and appendages, were carefully removed on a post-mortem examination, and sent to Professor Simpson.’

“The preparation had been lying for a considerable time in spirit, and the textures had consequently lost their normal colour. The most prominent feature in the specimen was a large irregular ovoid sac, measuring about twenty-seven inches in its greatest circumference. This sac contained a male foetus, apparently about the full time, which was attached by a funis, one foot in length, to a shrivelled placenta, which, in its turn, was connected to the inner surface of the sac. One side of the sac was affixed by a pedicle to the cervix uteri, from which a structure, looking at first sight like the body of the impregnated uterus, proceeded. The problem which had to be solved, therefore, was the nature of the sac in which the foetus was contained. Was it something altogether foreign to the uterus? Was it a dilated Fallopian tube? Or, was the case one in which the primary division of the uterus into two cornua, persisting to adult life, had permitted foetation to take place in one of the horns, leaving the other in the unimpregnated state? From a careful examination of the anatomical characters of the preparation, I have satisfied myself that the last-named is the correct view to be taken of the case.

“A portion of the uterine end of the vagina (*h*) had been preserved, and from its upper part the cervix uteri (*i*), one inch in length, proceeded in the usual manner. Continuous with the upper part of the cervix was an ovoid-shaped organ (*a*), one inch and a half long, which, instead of possessing the normal direction of the uterus, inclined obliquely upwards and to the right, and terminated in a somewhat pointed extremity, from which the right round ligament (*d*), Fallopian tube (*f*), and ovarian ligament, with its ovary (*e*), proceeded.

" Its left margin, convex and free, was invested, together with its anterior and posterior surfaces, by peritoneum, which membrane passed away from the right margin of the organ, and

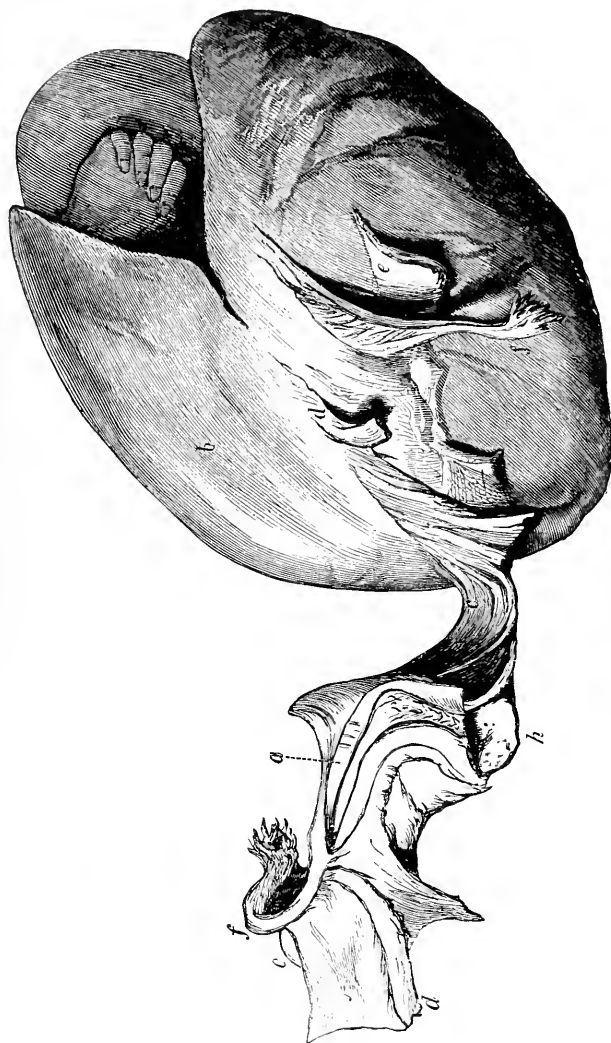


FIG 19.—Sir William Turner's second case of Cornual Pregnancy

formed the broad ligament (*g*). The organ was evidently, therefore, the right uterine cornu. When cut into, the canal in its interior was seen to be continuous with the upper part of the canal of the cervix, the two forming an obtuse angle

with each other. By its opposite extremity, the canal communicated with the interior of the right Fallopian tube (*f*), about two-and-a-half inches in length, was firmly tied down and permanently curved on itself by adhesions of a similar nature. There was no mucous plug in the cervix uteri, and no decidual structure in the right cornu, and the walls of the latter presented no increase of thickness over what is seen in the unimpregnated state.

"Attached to the left side of the cervix was a strong muscular band or pedicle (*c*), two inches long by one broad, which passed to the left and ended in the wall of the fœtus—containing sac (*b*), already described. The fibres of which this band was composed were continuous with those of the cervix and right horn on the one hand, and with those of the sac on the other. The band was invested by peritoneum, which was also continuous with the serous covering of the right horn and the sac. Dilated arteries and veins ran along the pedicle to the sac. The left Fallopian tube (*f*), with its peritoneal fold, was connected to the proper apex of the ovoid sac; two-and-a-half inches from and posterior to the point of attachment of the tube, the ovarian ligament with its ovary (*e*), and at about the same distance from, but anterior to the tube, the round ligament (*d*) arose from the wall of the sac. The distance between the place of termination of the pedicle and the point of attachment of the Fallopian tube was a little more than four inches. From these relations there can be no doubt that the sac was the dilated and impregnated left uterine cornu; the increased distance between the points of attachment of the various structures connected to the apex of the cornu, as compared with the corresponding parts on the right side, being due to the growth of the walls of the sac which had arisen during gestation. The left Fallopian tube, measured from where it arose from the sac, was five inches in length, and a fine probe could be passed along it up to the wall of the sac, but its inner orifice was obstructed. No adhesions interfered with its mobility. The organ of Rosenmüller was distinctly seen in the ovario-tubal peritoneal fold; but on the right side, from the thickened state of the membrane, this structure was not visible. The surfaces of both ovaries were flattened, and showed faint traces of old scars. No corpora lutea were to be seen.

"As it was of importance to ascertain the nature of the communication between the interior of the impregnated left uterine cornu and the canal of the vagina, cervix, or unimpregnated horn, a careful examination of the pedicle was instituted; but neither at its cervical end nor where the pedicle expanded into the sac of the left horn could any opening be detected. The peritoneum was then carefully dissected off the pedicle,

and with a sharp knife a section was made through the structure at right angles to its long axis. When the surface of this section was examined several small openings were seen. The question now was, Could any of these openings be a divided canal extending along the pedicle, or were they all divided bloodvessels? To determine this I introduced an injecting pipe into more than one of the vessels already described as extending along the pedicle, and forced a coloured fluid along it. The fluid oozed out at the various openings, and thus established their connection with the vascular system. Through the larger openings, also, it was possible to pass bristles into the bloodvessels. I was thus forced to the conclusion that the pedicle did not contain any canal connecting the impregnated horn with the vagina, cervix, or cornu of the right side.

“The appearance presented by the foetus, placenta, and walls of the sac indicated very clearly that all active changes had been suspended in them some time before the death of the mother. Absorption of the foetal tissues had commenced, more especially in the dorsal region, where a large patch of skin, with the subjacent muscles, had disappeared, and the ribs and laminae of the vertebrae were exposed. The placenta was tough and shrivelled—much more so than would have been produced by the action of the spirit of wine with which the specimen had been prepared. The walls of the uterine sac were thin and atrophied. In places the muscular fibres had almost entirely disappeared, and large calcareous plates, indicating an extensive degeneration of the walls of the sac, were abundantly distributed over the inner surface.

“In a cornual conception, again, the period to which gestation may be carried on varies with the state of development of the horn in which impregnation has taken place. When it is well formed, and communicates freely with the canal of the cervix and vagina, then gestation may go on to the full period, and the child may be born in the usual manner. When the impregnated horn, however, is rudimentary in its development, more especially if the canal of communication between it and the cervix and vagina is partially or wholly obstructed, then the expansion of the horn necessary to complete the full term of pregnancy may be interfered with, and rupture at the third or fourth month may occur. This mode of termination of a cornual foetation is well illustrated by the case occurring in Dr. Brotherston’s practice, which I first detailed. But even with a rudimentary horn and an obstructed passage, as the very remarkable case met with by Dr. Scott proves, not only may gestation go on to the full time without rupture, but the foetus may even be retained for several months within the dilated cornu without occasioning much inconvenience.”

The last paragraph clearly shows that we have in this remarkable observation and singularly clear and consistent description

a clue to the explanation of a few anomalous cases which could not be brought into harmony with the views I have given in the chapter on Ectopic Gestation. One remarkable case in point is a preparation in the College of Surgeons of a tumour identical in description with that given above, only that the pregnancy had not grown to the full term. The case was brought before the Gynæcological Society by Dr. Heywood Smith, and briefly is as follows:—On January 21 he operated, “and on opening the abdomen a tumour presented, of a dark greenish-brown colour, adherent to the omentum. The uterus was felt to be rather enlarged and free, as were also the ovaries and oviducts. From the colour of the tumour it was deemed advisable to remove it whole. The omentum was separated partly by stripping it off, and partly by ligaturing portions (a considerable portion of the omentum being removed), after which the tumour was found to be free, there being no pedicle. In consequence of the severe hæmorrhage and the presence of a small fibroid, and as the oviducts were rather swollen, both ovaries and oviducts were also removed, and the wound closed with silkworm sutures. After the operation the tumour was examined, when, on section, a large, thick placenta was cut through, constituting more than one-third of the whole tumour; and then the sac was laid open, setting free a quantity of dark brownish-green fluid, and revealing a fœtus of about five to six months, dead and quite dark. The whole ovum was enclosed in a fairly thick, smooth membrane, and there was nothing on the surface to indicate the placental site. The case was remarkable as being a case of so-called abdominal pregnancy without the least attachment to the pelvis, the uterus, or its appendages. The omental vessels also were not enlarged to any extent, nor was there much bleeding during the operation. The specimen was referred to the Pathological Committee to examine and report upon.”

The preparation was submitted to a committee for investigation, of which I was a member. We submitted the following report:—

“The sac containing the fœtus and placenta is made up of involuntary muscle fibre, and resembles in structure the Fallopian tube, portions of which from the same case were cut and prepared for the microscope, and compared with the sac-wall.

“The outer wall of the sac presents pieces of omentum, showing that fairly strong adhesions had arisen between the dilated tube and the omentum. It is also important to note that the Fallopian tube corresponding to the sac, &c., was scarcely represented, except by fimbriae. The corresponding ovary contains a large corpus luteum. Lastly, there is no evidence of rupture of the tube; and there can be no doubt that the specimen is one of tubal gestation.”

On reconsideration of this specimen I am disposed to regard it as one of cornual gestation in a bifid uterus in which the pedicle,

so well displayed in Sir William Turner's preparations, has become strangulated by rotation of the tumour. The twisted pedicle has disappeared, leaving the tumour free from uterine attachments, and sustained in what nutrition it required by its adhesions to the omentum. We know this is quite a common process in parovarian cysts. I have seen it in all its stages, from the immediate period of strangulation up to the time of actual separation from its original attachments to the tumour. The dark greenish-brown colour which the tumour presented at the time of the operation is a strong argument in support of this view.

The surgical treatment of such a case would be perfectly easy, for the pedicle always serves to admit of simple treatment by ligature.

In Sir William's paper will be found a most laborious and valuable summary of the literature of cornual pregnancy.

A final instance of bifid uterus completes my experience of the condition as a pathological complication, and certainly shows what extraordinary things we meet with in the abdomen:—

On May 1st, 1884, I performed a hysterectomy on a patient of Mr. Raffles Harmar for a large soft myoma, which had been growing for three years. The woman was very fat, and the operation was very difficult, the tumour being pulled out of the abdomen with a great deal of trouble. I cut the pedicle in the usual way and secured it by my wire clamp, noticing at the time that the cavity of the uterus was cut through. The tumour weighed $15\frac{1}{2}$ pounds, and after its removal the cavity of the uterus was, as usual, slit up to observe its relation with the tumour, and that was on one side, as is always the case with the soft cedematous variety. She made a very easy recovery, and went home after about six weeks. Some months after her recovery she presented herself to me again with another abdominal tumour, which, to my immense amazement, I recognized without any difficulty as a pregnancy. On vaginal examination I found the cervix large and soft, and unmistakably giving indications of that unexpected condition. My impression at the time was that I must have removed the uterus obliquely, and had therefore left undamaged one Fallopian tube, one ovary, and the corresponding cornu of the uterus, and therefore I was quite under the anticipation that the cicatrix of the uterus might give way, and I might be called upon at any time to remove the fœtus from the cavity of the abdomen. Mr. Harmar was good enough to assist me in the case, and watched over her with great care. To our intense astonishment, she had perfectly normal labour and a very fine full-grown child. As soon after her confinement as was permissible to make a thorough examination I did so, and then at once revealed what was the fact, that I had removed the left horn of a bifid uterus

with the myoma in it, and had left the right horn, in which subsequent pregnancy had taken place. The fact can be easily determined in the patient up to the present time.

Metro-peritoneal Fistula.—Years ago Simpson drew attention to the fact that occasionally when the sound is used, even by hands accustomed to the gentle manipulation required in gynæcology, it will pass through the fundus into the peritoneal cavity without in any way injuring the patient. A great deal of scepticism has been expressed about Simpson's assertion—in private of course—and it was not until I made a series of clinical displays of the fact that it was generally admitted. An eminent German surgeon openly disputed the possibility of its occurrence, but since has had reason to admit its actual occurrence. Certainly nothing is likely to startle one more than to find a sound pass five, six, or seven inches inwards, when there was no reason to suspect that it would penetrate more than two and a half. I had often heard Simpson speak of it, but the first time I saw it the event had an almost theatrical absurdity. An eminent Continental Professor of Midwifery was visiting Simpson, and we were showing him cases in Simpson's enormous private clientele. He was using the sound to replace a retroflected uterus, when he suddenly found it went inwards, and on gently pushing it up it entered to the hilt. He was greatly distressed, under the belief that the sound must have entered a pregnant uterus; but when Simpson told him that that was impossible, and that he had perforated the abdominal cavity, his distress was most painful, and we could only assure him that there was no danger by exhibiting to him the patient perfectly well three or four days afterwards. An explanation of such cases, to the effect that the sound travels along a Fallopian tube, which has been offered by Dr. Matthews Duncan, would, if correct, be really a more wonderful thing than the more simple one of the perforation of the fundus. When I first heard of Dr. Duncan's theoretical view of the permeability of the Fallopian tube, some twenty years ago, I regarded it as very unlikely, and I suspected it was based upon the fact that when Simpson said "white" Matthews Duncan uniformly was of a "black" opinion. There was no doubting the fact that the sound did travel into the peritoneum somehow. Simpson thought it went through the fundus, and, therefore, Duncan must have some other explanation. Not only would the sound have a difficulty in finding the internal aperture of the tube, but there is a still greater unlikelihood of the tube being placed in the axis of the uterus, and being at the same time so freely movable as to allow the perforating sound to pass in all directions within the abdomen. We can hardly, therefore, accept Dr. Duncan's view even for any of the cases. But in many which have come under my

own notice I have had abundant evidence that Simpson's explanation is the correct one. I have published some of these cases in the *Lancet* for the years from 1871 to 1875, where their details may be found; but the most interesting, as being the most conclusive, is a case published in the *Lancet* for May, 1872. The woman applied at the hospital for subinvolution six weeks after labour, the uterine cavity measuring six inches. After a month's treatment it was diminished to three inches, and then it was accidentally discovered that the sound could be made to pass through the fundus at one particular spot. The woman was so thin that it could be determined with the most perfect accuracy that this spot was about midway between the cornua and somewhat towards the front. The observation was substantiated by my colleagues and a number of friends, the woman remaining under care for many months. I must have passed the sound through the fistula at least twenty times, yet always without pain or even discomfort. My explanation of the aperture is that it was a fistulous opening, the result of a limited rupture of the uterus during labour. At the end of my report of the case, I suggested the question, "May this woman become pregnant again?" and I answered it in the belief that she might. She has had two children at the full time since, and the hole is still there, exactly as it was in May, 1872.

The fact of the occasional existence of such fistulæ, or of the perforation by the sound of a thinned uterine wall, is sometimes of immense importance in diagnosis. In the *Lancet* for June, 1875, I published a case of such perforation in the presence of an ovarian tumour, the perforation having been made by one of my colleagues just as I was about to begin the operation for the removal of the tumour. Had I not been satisfied with my diagnosis, this occurrence would probably have stayed my hand; but the perfect success of the operation justified my proceeding. I found, besides the ovarian tumour, a small myoma in the fundus, behind which the sound had probably passed; but I did not stop to examine minutely for the aperture more than to satisfy myself that it was not through a Fallopian tube that the sound had passed. The patient recovered perfectly, and the sound can still be passed into her peritoneal cavity.

Tumours of the Uterus.—These growths can be discussed most conveniently by following a classification based on their anatomical relations to the uterine wall, by which they fall into the three classes of polypoid, interstitial, and subperitoneal. By a polypoid tumour we mean one which is distinctly pediculated, and presents into or through the uterine canal. By an interstitial tumour is meant one

which is not pediculated, and which is either surrounded by a layer of uterine tissue or is continuous with or replaces that tissue. By subperitoneal is meant a tumour which may or may not be pediculated, which arises from and is more or less connected with the uterus on its outer aspect, is not covered by a layer of uterine tissue, but is invested by the peritoneum which, previous to the growth of the tumour, was in association with the outer uterine surface.

A vast number of different kinds of uterine polypoid growths have been described, almost every author having found a new one; and the mere naming of the varieties mentioned in books would probably fill half a page. But only a very cursory examination of the literature of the subject is necessary to show that the great majority of the different names refer to the same thing, and that the actual varieties of polypus probably do not amount to more than four or at most five. Thus we may at once dismiss the fibrinous polypus, because it cannot be said ever to be an independent growth. It consists always of the deposit of fibrin, often colourless, but generally more or less coloured by hæmatin from some bleeding surface. That surface may be the site of a placenta, or a fragment of placenta retained, or it may be a myxomatous or cancerous growth. On these grounds I refuse to place this growth in my nosological table as a form of polypus, for it is always to be regarded as a mere sign of some other condition.

The polypi which have been described variously as cellular, glandular, mucous, channelled, cervical, &c., will always be found to present certain characters which refer their origin to the hypertrophy of a limited patch of the villous surface of the cervix. They are always of small size, red in colour, bleed freely, are soft and very friable, are attached always to the cervix, and when examined by the microscope on perfectly fresh section they possess all the characters of the villous structure. Their channels are only the inter-villous spaces or the mucous crypts, and their cells only the ordinary epithelium. The fibrous basis of the membrane is generally somewhat hypertrophied, but is never so consolidated as to make them fibrous. I have already referred to them in speaking of the cervix, so that nothing more need be said here.

By far the most common form of uterine polypus consists in an enucleation of an ordinary myoma of comparatively small size. The conditions of this enucleation are that it should not be of very large size, and that it should be either immediately under or at least in close proximity to the mucous surface. Another, but not so essential, condition is that it should be a single growth. The cases in which we can diagnose and remove a uterine polypus, where there are at the same time other intramural myxomatous

growths, are so rare that I have never met with one; whilst, on the other hand, I have removed a very large number of myomatous polypi in which there were no other growths. The process of enucleation would not be required in a tumour which was absolutely submucous in its origin, and that instances of that kind do occur is certain. But I believe that by far the larger number of myomatous polypi originate in sites where there is a distinct layer of uterine tissue between them and the mucous membrane; for such a layer can be traced over most of them from the pedicle, and I believe that the thickness of the pedicle is in proportion to the original thickness of this layer. All myomatous tumours of the uterus, without a single exception in my own experience, are distinctly separable from the surrounding tissue save at a few points, or oftener at one point only, and the line of this separation is marked by a layer of loose connective tissue. This encapsulation is the explanation of the travelling of these tumours. If a single interstitial myoma of small size is so placed that there is a much greater thickness of uterine tissue outside than there is between it and the uterine cavity, as the organ becomes hypertrophied along with the growth of the tumour, the expulsive efforts which occur constantly, but chiefly at the menstrual periods, gradually push the tumour through the thinner wall into the uterine cavity. As it is pushed downwards it gradually loses its muscular covering, and may even lose its mucous covering, the former being retained only at the upper, outer, or last protruded part of the polypus. In this way the muscular covering, when it is retained all over the growth, will be found to get thicker and thicker towards the pedicle. If two or more tumours were present together, it is easy to see that the uterine efforts to extrude one would, in all probability, be frustrated by the same efforts being, at the same time, exerted upon another or upon others; so that one could be extruded only by being placed in circumstances far more favourable than the others. This extrusion would be more likely to be encouraged towards the peritoneal surface than to the mucous canal; so that as a matter of fact, when we find a large number of myomatous growths present in the same uterus, we find them in greater part subperitoneal, because that is the direction of least resistance, and their extrusion would depend in no way upon the position of their origin, provided they began to grow at nearly the same time.

In the history of a single growth becoming polypoid, after the cavity has been reached the cervix is attacked, and at each menstrual period a process resembling labour is set up, generally on a small scale, but sometimes with a violence in the symptoms which is not excelled by that of an ordinary confinement. The agony of the expulsive pains during the birth of a polypus is sometimes really terrible, and being associated with hæmorrhage

and protracted over many months, it is not surprising that many patients die under it, and that the majority of those in whom the birth of the tumour is accomplished are reduced to the last extremity of exhaustion and anæmia. Besides the excessive hæmorrhage at the menstrual periods, there is a constant flow of serum, more or less tinged with blood, which is of itself a serious cause of exhaustion. When symptoms like these are brought under our notice, an examination is of course at once demanded. If the tumour has passed through the cervix and is found in the vagina, the treatment is extremely easy, and the only precaution necessary is to be quite sure that it is a polypus and not an inverted uterus. That being ascertained, the wire of the *écraseur* is to be passed carefully over the tumour on to the pedicle, and the latter divided, a proceeding which is never followed by any hæmorrhage. But it must be borne in mind that after the removal of a polypus the uterus requires to undergo involution as much as after a miscarriage, so that it is advisable to place the patient on a course of potash and ergot for a few weeks after the operation, in order to prevent excessive loss at the subsequent periods.

If, however, the cervix has not yet been dilated, the difficulties, both in diagnosis and treatment, are greatly increased. Without the dilatation of the mouth of the womb, diagnosis is mere guess-work. I had a case sent to me recently in which the belief of the patient and the history she gave pointed to the retention of a piece of placenta at a miscarriage which had occurred eight months before. Yet when I dilated the womb I found a tumour in the very early stage of extrusion, and which, left to itself, would unquestionably have killed her in a few months by exhaustion from hæmorrhage. When the extrusion into the cavity has been completed, so that a pedicle has been formed, the removal by the *écraseur* is comparatively easy, and generally safe. Sometimes difficulty is experienced in removing the tumour from the uterus, and even from the vagina, on account of its size. This may be overcome by the use of short midwifery forceps; but a more elegant, safer, and expeditious practice is to seize the separated tumour by a hook or vulsellum and pare it into slices by means of a curved and blunt-pointed bistoury, somewhat after the fashion in which potatoes are peeled. I have had occasion to put this in practice frequently, and found it much easier than it seems on mere description.

If extrusion into the cavity has not been accomplished, what is to be done? The answer to this question must be decided on the merits of each particular case. There can be no doubt that opening the capsule of a uterine myoma is accompanied by considerable risk, especially if the tumour cannot be removed at once, but must be left partly to separate itself. Dr. Marion Sims was a strenuous advocate for immediate separation and removal,

and this practice has been fairly successful in my hands. On the contrary, of eight cases in which I have been obliged to leave the tumour in order that its separation might be completed by the expulsive efforts of the uterus, four have died. The necessity for such an operation must always be decided by the condition of the patient. If she seems unlikely to bear the further loss of blood, and the tumour is of a size likely to pass through the canal, the capsule must be opened, and immediate enucleation and removal attempted. If the latter cannot be accomplished, then the patient must run the risk of the slower separation of the tumour; and there is every reason to hope that even this latter process may yet be made as successful as the former. But when I look back on the whole of my experience of enucleation, especially when contrasted with the results of removing the uterine appendages, I am satisfied that enucleation is a thing of the past; and, with the exception of Dr. Moore Madden, of Dublin, this is the view of all modern authorities. The occurrence of several cases in which enucleation having been accomplished with enormous risk (the patients in every instance having escaped death by the narrowest possible margin), and yet had afterwards to undergo the operation of removal of the appendages for fresh growth, has completely deterred me from dealing with myoma by enucleation. As an illustration I reproduce a contrast of two cases which I watched, in the one instance to the death of the patient, and in the other to her complete recovery.

In February, 1878, T. F., aged 34, was sent to me by Dr Webb, of Ironbridge, Shropshire, on account of profuse menorrhagia, of which she was seldom a fortnight free. It was excited upon very slight exertion, and had been steadily progressing for five years till she was completely exsanguine. The fundus was found as large as a Jaffa orange, with all the indications of a contained myoma. For some weeks she was put on liberal doses of bromide of potash and ergot, but no satisfactory result was obtained, so that in April I admitted her to my private hospital, and dilated the uterus and removed by enucleation, and with a great deal of difficulty, a tumour of considerable size. I saw her in the July of the same year and found that the intercurrent period now extended to three weeks, and that her menstrual periods lasted for less than a week. She improved till May, 1880, when she was regarded as being quite well. She came back to me, however, in August, 1881, complaining that for the previous four months menstruation had been extremely profuse, and on examination I found the uterus larger than ever. I therefore recommended that the uterine appendages should be removed, and this operation I performed on the 25th August of that year. She made an easy recovery, and has never menstruated since. She married

in July, 1884, and has since remained in perfect health, leading a perfectly satisfactory married life.

In the early part of 1878, A. H., then aged 28, came under my care as an out-patient at the Women's Hospital for profuse menorrhagia. She was completely exsanguine, her periods lasting twelve or fourteen days, and she was quite unfit to follow her avocation as a domestic servant. She remained under treatment as an out-patient for some months, and I then admitted her to the hospital, where she had full treatment of ergot and bromide of potash, rest, and nourishing food. The cause of the hæmorrhage had been discovered to be a myoma, enlarging the uterus to the size of a cricket-ball, the fundus being completely retroverted. She was very averse to any kind of operative interference, and left the hospital, only, however, to be readmitted in May, 1879, in a condition quite as bad as that when she first came under my care. I then persuaded her to allow me to dilate the uterus for the purpose of removing the tumour. The difficulty of dilating was greatly increased by the position of the uterus, but after various contrivances I succeeded in getting the capsule incised, hoping that the tumour would expel itself; but no progress was made in this direction. Two or three weeks later I divided the cervix freely on both sides and opened up the capsule, again attempting to enucleate the tumour, but could not finish the operation, and for some days after this it was doubtful whether the girl would live. At the end of a fortnight the tumour had separated a good deal, and putting her again under an anæsthetic I succeeded in finishing the process of enucleation; but after the operation she lay for some days more dead than alive, and it was quite four months before she was able to leave the hospital. She gained strength, and resumed her occupation as a domestic servant at about the end of the year 1879, and during 1880 she also remained well and contracted an engagement to marry. Early in 1881 she came back to me in a condition almost as bad as that in which I had first seen her; the hæmorrhage had returned in full force, and on examination I found that another tumour had grown larger than the first.

I urged her to submit to a radical operation of removal of the appendages, but when the nature of this was explained to her she was entirely averse to it, and, with the assistance of her employers, went to seek advice of an eminent gynecological surgeon in London, who entirely condemned the operation. She therefore came back to Birmingham and remained under my care, refusing, however, to have any kind of surgical interference lest it should destroy any possibility of her having children. In spite of my earnest protests she married, and within six months of her marriage she succumbed to hæmorrhage.

Such cases show, in the first place, that enucleation of a myoma by no means constitutes a cure of the disease. In this respect the operation is quite unlike that of removal of the appendages. These two cases were quite parallel, whilst in both we have a complete failure of the process of enucleation subsequently in one a complete cure and a perfect re-establishment of health, maintained up to this day, was secured by the operation, which in all probability would have saved the life of the other, had she not been improperly advised against submitting to it.

Of the pathology of these myomatous polypi I shall not speak until I discuss their position as interstitial and sub-peritoneal growths, further than to say here, what I shall give my reasons for afterwards, that all the so-called fibroid, fibrous, and hard polypi ought to be classed under the term myomatous. Occasionally these polypi are found to be cystic, filled with clear serous fluid, as in an instance I described in the Transactions of the Pathological Society of London for 1873, and which is now in the Museum of the College of Surgeons. Of the rarer forms of polypi, I have met with myxoma and villous cancer growing from limited areas of the inner surface of the uterus, and presenting themselves in polypoid form. These, however, are really more accidental than real forms of polypus; for it is neither the usual history of the kind of growths referred to, nor was it the persistent history of them in the cases in which they occurred; for after the removal of the polypi the diseases returned and involved the whole thickness of the uterine wall and neighbouring organs. I may be forgiven, then, if I express my belief that we should still more restrict our use of the term polypus, so that it may include only the small mucous growths in the cervix and the myomata extruded into the uterine cavity; and that such other growths as appear at first to resemble polypi should be spoken of only as polypoid forms of myxoma, epithelioma, &c., &c.

The terms fibroid, fibrous, and fibroma, as applied to uterine tumours, are, I believe, so completely erroneous that they should be banished from pathological nomenclature. I have now examined a large number of solid uterine tumours, and I have never met with one in which simple fibrous tissue played any but a very subservient part. Of the tumours which pass popularly under the terms I speak of, I venture to say that only in extremely exceptional cases would it be found, on sufficient examination, that the chief constituent of the tumour was not fusiform muscular fibre, with its characteristic rod-shaped nuclei. By sufficient examination I mean something more than the cursory glance which usually suffices to convince the ordinary microscopist of the nature of a growth. One or

two sections cut from a piece of a tumour taken at random, hardened in alcohol or chromic acid, and stained by carmine, are not sufficient to display all the characters of the growth. First of all, it is necessary to examine every tissue, the nature of which it is desirable to determine accurately, in a perfectly fresh condition; and to do this the sections must be cut by the freezing section-cutter. (See my paper in *Humphrey and Turner's Journal of Anatomy and Physiology* for May, 1875.) The very thin sections thus obtained must be then treated in a great variety of ways in order to obtain accurate results, for only the experienced histologist knows how different the same tissue may be made to look by different treatments. The two best tests for the presence of unstriped muscular fibre are the long-continued action of dilute acetic acid, and careful staining with silver nitrate; but sometimes a hæmatoxylin process, and sometimes carmine, will best display its characteristic rod-shaped nuclei. I am never satisfied till I have examined a very large number of sections taken from different parts and in different planes of the tumour under examination; and in every solid tumour of the uterus which I have yet examined I have found unstriped muscular fibre to be the sole constituent. Of the round, lobulated, and encapsulated tumours, already spoken of as polypi, almost the sole constituent is this muscular fibre, the fibrous element being present only as a myolemma.

In 1874 I drew attention to the fact that up to that time two apparently distinct kinds of tumours had been confounded under the term "fibroid tumours" of the uterus, tumours having pathological and clinical features perfectly distinct; and I ventured to bring into use the term "soft oedematous myoma" to define one class, and the term "nodular (generally multinodular) myoma" to classify the other. All my subsequent experience goes to confirm my views on this subject, and to urge that the old terms "fibroid" and "fibroma" should be discontinued, as well as the old classification of "submucons," "interstitial," and "subperitoneal."

I have already said that the terms "fibroid" and "fibroma" are completely erroneous. No one can defend them. The old classification is wrong because it is confusing and useless. A soft oedematous myoma is always interstitial, and a multinodular myoma may be, in fact generally is, at once submucons, interstitial, and sub-peritoneal.

Following are two sketches of sections of such tumours, presenting their characteristic relations to the bulk of the uterus; and also two sketches of microscopic sections of the same tumours.

The soft oedematous myoma is always solitary—one great mass, covered by a thick uniform layer of increased and perfectly normal uterine tissue. The uterine cavity runs up one side of it, separated from the tumour by a regular layer of uterine tissue covered by

endometrium, and showing that the tumour grew from one point in the wall. No subsidiary masses ever appear, and when the mass is removed—as it is very easily by enucleation—if its cavity were closed it would be impossible to tell the uterus from one in which a pregnancy had existed, but for the absence of the endometric characteristics of gestation. The process of enlargement

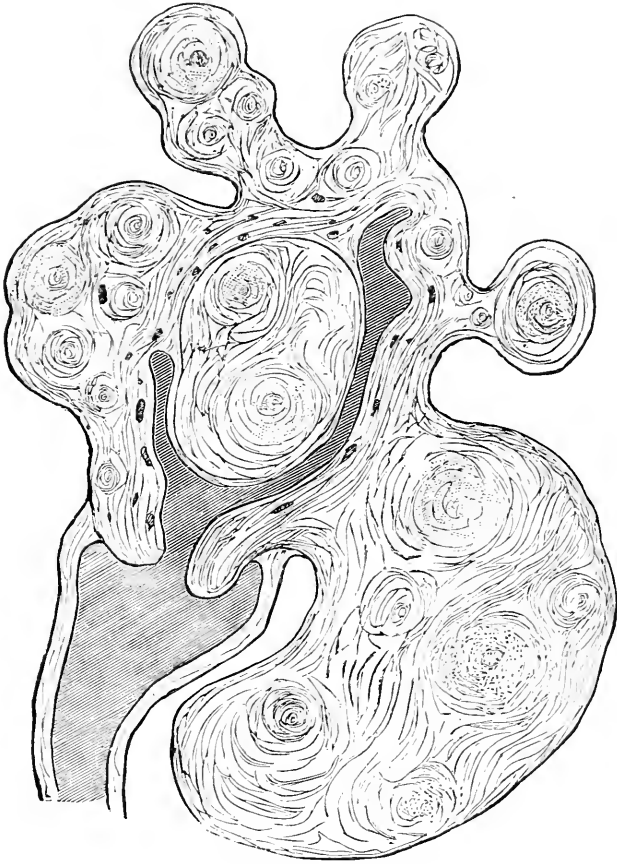


FIG 20 —Multinodular Myoma.

of the uterus inhabited by a soft cedematous myoma seems to be identical with that witnessed in pregnancy. They are the tumours which can easily be enucleated; only, and unfortunately, we rarely see them till they are above the brim of the pelvis, far too large to remove by the vagina. I have never seen one in its early stage. When one of these tumours is removed and cut into, an enormous quantity of serum drains away in a few hours, so that a thirty-

pound tumour may diminish to one-fourth of that weight. They present a peculiar gelatinous appearance on first section, altogether different from the multinodular tumour, and the elementary bands of fibres of which they are composed do not seem to have any definite plan of arrangement; at least, I have not been able to guess at any.

Very different are the naked-eye appearances of the multinodular myoma. Its constituents are masses of all sizes, which

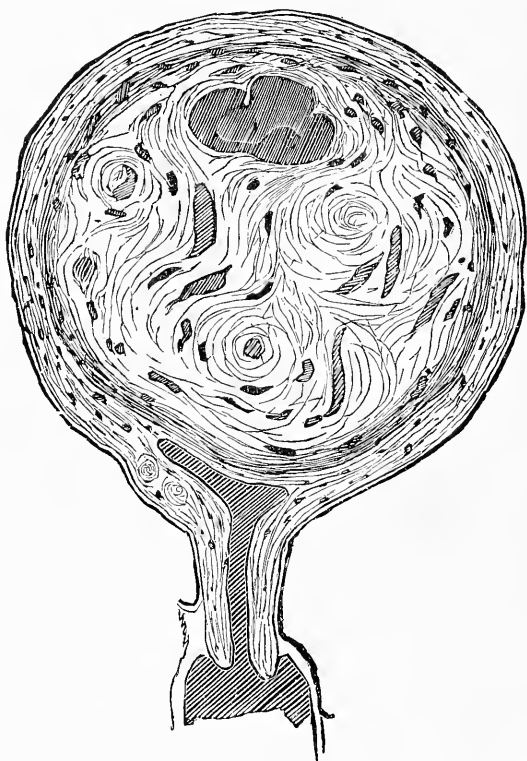


FIG. 21.—Edematous Myoma.

seem to have got entangled in the web of the uterine tissue. They are in all sorts of places, and are, as I have said, generally in the same case, submucous, subserous, and interstitial. They can be enucleated from their matrices, but with infinitely more difficulty than the solitary mass of oedematous myoma; and, surgically, enucleation is of no avail. I never saw a nodule having its origin in the true cervix, and I regard myoma of both kinds as essentially a disease of the body of the uterus. Those who have advocated enucleation for myoma do not seem to know that there are two

distinct varieties of the disease. The multinodular tumours are very dense, almost cartilaginous, do not yield serum, and seem to be endogenous. Certainly the characters of the tissue of their periphery is that of greater maturity than is that of their centres, and this tissue is always more or less lost, as it were, in the true tissue of the uterus at one or two points where vessels are found to enter; and these vessels, I have found by injection, permeate the tumour to its centre. I have found no such state of things in

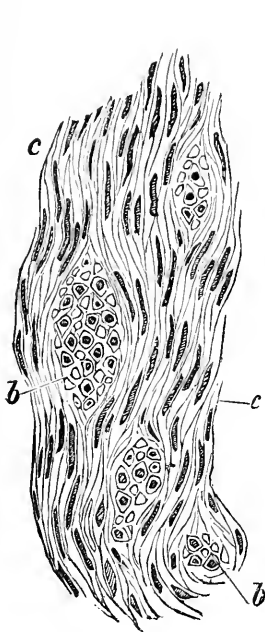


FIG. 22.

Fibromyoma (Microscopic).

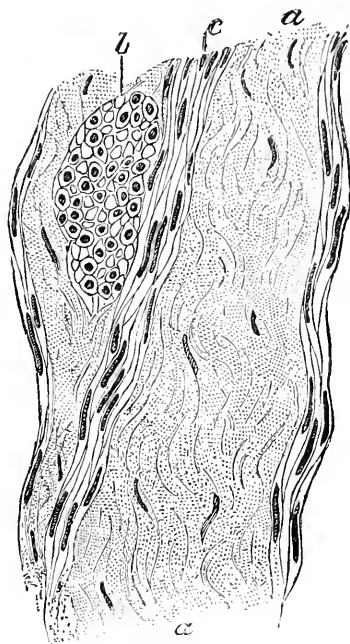


FIG. 23.

Edematous Myoma (Microscopic).

the soft œdematous myoma. In a few instances of very successful section-cutting I have been able to satisfy myself that in multinodular myoma the arrangement of the bands of muscular fibre was upon a definite and concentric plan; and, taken together with the relations of the bloodvessels, this seemed to me suggestive that these tumours are endogenous.

Both varieties are clearly the product of the overgrowth of the normal chief element of the uterus, unstripped muscular fibre, with its special fusiform cells and rod-shaped nuclei. The soft œdematous myoma has its fibres widely separated by cavities containing serum and "mush," which looks like the remains of effete cells. The hard nodule has its bands of similar fibres closely

packed, and all fresh-looking. I fancy, therefore, that the soft tumour is exogenous, and this hypothesis is supported by the facts that when cut into it never bleeds, as the hard tumour does, and it is at once killed by opening the capsule in a way that is certainly not the case with the multinodular tumour, for I have seen that granulate and flourish in the external wound after a hysterectomy, when the clamp wire has cut it in halves. In neither of the varieties do we ever see immature cell-growths, and this is why we can say of uterine myoma, it is the only tumour besides lipoma which is never malignant.

Not only are the naked-eye and microscopic characters of the two varieties of myoma quite distinct, but the facts of their general pathology, so far as I have been able to observe them, are totally different. Multinodular myoma is essentially a disease of menstruation; that is to say, there can be no doubt whatever that its growth is in some way associated with the peculiar periodic function of the uterus. When impregnation takes place, the uterus, under some mysterious influence which governs its vascular supply, increases the number of the muscular fibres in its walls generally, but by no means always, in a gradual and uniform manner. I have seen many cases where the uterine walls seemed to be no thicker than a towel, at the seventh and eighth months of pregnancy; yet during the last two or three weeks the walls attained their normal thickness, and the labours were quite natural. There can be no doubt that the mechanism by which the increase of the uterine fibres takes place is directly that of an increased blood supply, and modern physiological discoveries have shown that there is a system of paretic nerve fibres whose stimulus induces dilatation of the walls of the arterioles. In the uterus it is likely that this special nervous system is more active than in any other organ, and that therefore even a slight accident, by throwing it out of order, would display more tangible results than would be seen elsewhere. It is quite certain that these multinodular myomata are strictly localized in their origin, and I think it likely that they grow endogenously from an excited arteriole and its branches, the change originating probably in the mere perversion of a physiological act. This would explain many facts in connection with them already mentioned, and the arrest in their growth which always occurs at or soon after the menopause. I think it also explains the fact, which I have repeatedly observed in subperitoneal myomata, that they increase during pregnancy, and diminish after parturition.

The great bulk of cases of multinodular myoma are seen after the age of 35, perhaps we might almost say 40; and though, as I shall afterwards show, their presence in the uterus may delay the menopause indefinitely, yet when it does occur, either naturally or as the result of operative interference, they are arrested in growth,

and dwindle. In fact, when the appendages are removed for multinodular myoma under the age of 40 the tumours generally disappear entirely.

But the facts observed in connection with soft œdematous myoma are very different. It is no regard of age. The largest I ever removed, sixty-eight pounds, grew entirely after the menopause. The patient was brought to me in 1880 by the late Dr. Luce, of Stratford-on-Avon, and was then 55 years of age, and had passed the climacteric something like two years. Her menstruation had always been regular, but rather profuse for about sixteen years before its cessation. She had never been pregnant. When I saw her first she had a large soft œdematous myoma occupying the whole of the pelvis, and reaching nearly to the umbilicus, which she was quite conscious was increasing rapidly. I advised her to have it removed, but she declined any operative interference, and I heard nothing of her till she was sent to me by Dr. Latimer Greene, in March last. The tumour had enormously increased, and a large mass of it protruded through an exomphalic ring, constituting a huge structure over which the skin was threatening to give way. The size of the tumour entirely prevented her earning her living as a midwife. She suffered from a nasty bronchial catarrh, and had a purplish colour of the face which was most unpromising, whilst it was perfectly certain that a larger part of the tumour was adherent to the peritoneum. The old lady was nearly 63 years of age, yet she was now very anxious to have the tumour removed. I consented to undertake the responsibility, and the operation was performed on March 20th, in the presence of Dr. Macan, Master of the Rotunda. She made an admirable recovery. The tumour was proved to be, as I anticipated, a huge, solitary, soft œdematous myoma. After it had drained most of the serum away it weighed 26½lb., and I am sure it was a good deal more than twice as much at the time of removal. It is of course doubtful whether this tumour did not start into existence before the cessation of menstruation, but it is within my own knowledge that it increased from something like 10lb. to something like over 50lb. in the eight years' interval between the two occasions of my seeing her, and during that time she had never menstruated at all.

I have done hysterectomy for this kind of tumour at 18, 24, 28, 29, 30, and 31 years of age, and I am almost being forced to the conclusion that removal of the uterine appendages in this disease, though it may be perfectly successful in arresting menstruation, may yet entirely fail to arrest the growth of the tumour. On the other hand, the youngest patient upon whom I have done hysterectomy for multinodular myoma was 37. On this point, however, I am not yet certain; but even what I have said is enough to make us believe that while the

hard multinodular myoma is a disease of the menstrual life, soft œdematous myoma certainly is not. The oldest patient for whom I have done hysterectomy for soft œdematous myoma was 63, and the oldest patient upon whom I have ever done hysterectomy for hard multinodular myoma was 52—facts of themselves sufficient to show that the two diseases are quite distinct, especially when it is remembered that in the former case the tumour grew entirely after the establishment of the climacteric.

A very strange fact concerning the history of uterine surgery and pathology is the utter disregard in which myoma was held until quite recently as a serious disease. Pathologists were accustomed to see multiple myomatous tumours of the uterus at post-mortem examinations, and to regard them as mere curiosities, of no account. Obstetricians saw anæmic women going about from hospital to hospital, or from consulting-room to consulting-room, but they do not seem to have associated the uterine tumours and the profuse menorrhagia, with its resulting bloodlessness, in any serious relationship. It is really little more than thirty years ago since serious attention was drawn to the fact that myoma was frequently a fatal disease. There exist still some antiquated practitioners who tell their patients, when a myoma is discovered, that it is merely a "lump in the womb, of no consequence, which will cease to trouble them after the change of life."

The earliest notice of uterine myoma which I have met with is by Astruc, who vaguely describes it as "sarcoma of the uterus," and clearly he had not seen much of it, for if he had its salient features would have been more clearly rendered by a writer who has described pyosalpinx so precisely. I suspect that in Astruc's day uterine myoma was very rare, and that it has of recent times become very common is abundantly evident.

The proof that such diseases are progressing is given by the fact that this very disease, unknown amongst the savage women of Africa, has become a very scourge amongst their descendants (of a very few generations) in the Southern and Central States of America. Some thirty-five years ago efforts to treat them by heroic doses of ergot were made by Hildebrandt and others, but they proved ineffective. Greenhall advocated their removal by causing them to slough out by piercing them with a red-hot iron. Lizars (1825) and Granville (1827) stumbled into hysterectomy when they started to perform ovariectomy; and Spencer Wells (1864) had the same fate. In 1872, Hegar, of Friebourg, and I simultaneously devised the idea of removing the uterine appendages, and this operation has taken an established place for the treatment of all myomata,

unless, for reasons to be described afterwards, hysterectomy is not an inevitable alternative. Great efforts have been made to adapt less energetic measures, such as the cauterization of the internal uterine surface by the electric current, by the injection of styptics, &c., &c., but none of them have any permanent good effect, and indeed they are more risky than the surgical operation. Much fierce discussion has been vented upon this question, and at least one satisfactory result has been arrived at, as it is now admitted that uterine myoma is a very frequent and very serious disease.

In the early stage of a myoma, whether it be of the hard multinodular or of the soft oedematous variety, there may be an utter absence of symptoms. Indeed this is the case throughout the course of many cases of multinodular myoma, for it is certain that numbers of women bear them unknowingly to their graves. If the tumours start their growth close to the climacteric period, and if they do not delay the accomplishment of that change, they may never cause the slightest inconvenience. But often they cause an indefinite delay in the arrest of menstruation, and I have been obliged to remove the uterine appendages at the age of 56 on account of the hæmorrhage from a myoma.

The most troublesome symptom always is hæmorrhage, and that invariably consists in menorrhagia, unless the tumour is polypoid, and then the hæmorrhage is continuous as soon as the polypus is extruded from the uterus. When not so extruded the increase of hæmorrhage consists in the periods becoming more frequent than they should be, much more protracted and much more profuse. It is, however, very rare that there is no intermenstrual period. Pain is not a usual symptom unless the tumour be exercising pressure on the walls of the pelvis, or on the bladder or on some other pelvic structure. Retention of urine due to the presence of a myoma jammed in the pelvis is quite a frequent symptom, and great difficulty of moving the bowels, from pressure on the rectum, is not unusual. It is the multinodular tumour chiefly which causes these symptoms, for the soft cedematous myoma almost always rises quietly out of the pelvis just as the pregnant uterus does, and it rarely calls attention to its existence save by its increase in size. Hæmorrhage is almost exceptional in the soft cedematous myoma.

If the tumour has risen out of the pelvis its presence may easily be determined by placing the hand over the lower abdomen. If it has not so risen it can be discovered by vaginal touch and, generally, precisely determined by the bimanual method of examination. But a differential diagnosis is not always possible even in the most experienced hands, between a small myoma, a retroverted and subinvolted uterus, and a case where the

appendages are adherent in a mass upon the back of the uterus. The sound may help, but the assistance obtained from it is far more vague than is generally supposed; it just as often gives mistaken indications as those which are accurate, and the more experienced a practitioner is the less he will use it. The multinodular myoma will nearly always reveal itself by the features to which it owes its name. The soft œdematous myoma, on the contrary, so very closely resembles pregnancy that in two instances, with one hand actually in the abdomen and the other in the vagina, I have been unable to determine the exact condition. In both of these cases I closed the abdomen rather than run the risk of opening a pregnant uterus. Both patients recovered, and, by the subsequent progress of the cases, I was justified in a second attempt, in which I removed successfully huge soft œdematous myomata. In some cases it is absolutely impossible to discriminate between adherent appendages and small multinodular myomata until the fingers are down in the pelvis, through an abdominal wound.

A final method of investigation is spoken of in text-books: that of dilating the uterus and exploring in that way. I confess I have found this so much more dangerous than exploring from within the abdomen that I prefer the latter method, especially as it gives already the road for effectual treatment whatever the condition.

Should the case turn out to be one of multinodular myoma, the cervix will be found so rigid that satisfactory dilatation is extremely difficult and by no means free from risk, and even when it is accomplished it is useless, as enucleation of the nodules is impossible. Those who have advocated enucleation have been clearly and entirely ignorant of the differences between the two kinds of myoma. If dilatation is practised for a soft myoma, the chances are that the process will kill the myoma and that it will slough; and as these tumours are rarely seen till they are of a size too large to pass through the pelvis, the result will be most hazardous. Finally, nothing is more risky than dilating the uterus, or tinkering with the uterus in any way, when the uterine appendages are adherent behind it.

Having diagnosed a case as one of uterine myoma, what is to be done with it? The answer to this question will depend upon the age and position of the patient and the severity of the symptoms.

If the patient is under thirty, removal of the uterine appendages may be at once accepted as the proper course, for whether the symptoms be severe or not, the certainty that it will increase in growth at that time of life is so great that operative interference will surely be demanded sooner or later, and it is far safer that it should be done at once. The mortality of the operation, as I shall afterwards show, in the early stage of the disease, is a mere

bagatelle, and the certainty of cure is at least 95 per cent. Nothing so brilliant can be claimed for anything else in surgery. Upon the general arguments for and against these operations I shall dwell by-and-by, so that here I need not discuss them. If the patient is over thirty-five years of age I should advise watching the case at longish intervals, so as to determine the rate of growth, and to operate at once if it be found that the rate is at all rapid. After forty, if the hæmorrhage is not very severe, and even if it is, a fair trial may be made of the use of the salts of potash and large doses of ergot, together with stringent confinement to bed during each period and *during the whole of its duration*. This is of far more use than anything else, and it is the reason why we are obliged to operate on poor women when we can afford to hold our hands with rich ones. I have pulled a well-to-do woman through a twelve years' illness, due to a myoma, without operation. She dreaded any kind of cutting, though she would have submitted to anything if I had pressed it. And I confess if I had been the patient I should have preferred the five per cent. risk of the operation to the ten years' confinement to the couch, but she did not. And, with poor women, to discuss such delays is an impossibility. The greatest good and the kindest thing for a hospital patient—especially a woman—is to cure her speedily, and for myoma that cure lies in the removal of the uterine appendages. Under no circumstances do I sanction uterine tinkering with injections of astringents or electrical currents. All these things are dangerous—far more dangerous than the operation—are painful, irksome, tedious, and expensive; and, whatever good results, it is not permanent.

There is a curious natural termination of myomata, and one of which I wish we could discover the method: that of their total and unexpected absorption. Such a phenomenon has been described by several authors, but it is just the sort of occurrence which is difficult to believe in till it has been seen; and as I have seen it several times I believe in its occurrence. The first case I saw was one in which I determined the presence of a myoma as large as an orange in the posterior wall of the uterus. The patient was under observation for nearly three years, during which time she suffered from profuse menstruation. No change in the tumour took place in that period, and the removal of the tumour was discussed at intervals, the patient never, however, making up her mind definitely to undergo the risk. I dilated the cervix with tangle tents after she had been under my care about a year, and satisfied myself completely as to the nature of the case. After this the treatment was continued for nearly two years, chiefly by the bromide and ergot, but it made no change either in the amount of loss or in the tumour. She went to live on the Continent for about fifteen months, chiefly in Russia, and had no treatment

whatever during that time, yet when I saw her last, some eight years ago, there was no trace of the tumour, and she has since married and borne children. We could not account for the disappearance of the tumour. She had had no illness at all referable to the uterus, of an acute kind, and had passed no substance, so that the tumour could not have been expelled, and she was quite as much astonished as I was at the unexpected improvement in her condition. Of course the objection must be entertained that perhaps the tumour was some unusual variety of hæmatocele, or other kind of tumour which we find is usually absorbed. I am positive, however, as to my diagnosis, and my view is supported by the unaltered state of the tumour for nearly three years, in spite of various kinds of treatment.

I published the following case in the *Lancet* for 1881, where a large myoma disappeared after the removal of the ovary for cystoma. It was under the joint care of Mr. Badley and Mr. Messiter, of Dudley, with whom I saw the patient in consultation upon July 24th, 1879:—

E. D——, single, aged 30, had severe uterine hæmorrhage, and had been noticed to be rapidly increasing in size. A tumour had been discovered by Mr. Badley about a fortnight previous to our consultation. At the time I first saw her we resolved the condition into the presence of two tumours, one cystic and the other down in the pelvis, solid. On July 31st I performed abdominal section, and removed without much difficulty the cystoma. The solid tumour in the pelvis proved to be a myoma in the posterior wall of the uterus, which I could not remove. She recovered from the operation without a bad symptom, and went home on August 15th. I saw her on October 10th of the same year, and found the myoma reduced to less than half the size it was at the time of the operation. She was married in December, 1879, and in October, 1880, came to me to know if she was pregnant. There was no difficulty in determining that she was about five months pregnant, and not a trace of the myoma was to be discovered. I am informed by Mr. Messiter that she has since been confined without any trouble.

This is one of a number of cases from which evidence is accumulating in my hands to show that uterine myoma depends very frequently upon disease of the ovaries, and that removal of the diseased glands cures the myoma. In this case it is remarkable that removal of one ovary was sufficient to secure this desirable end, whilst the other remained sufficiently healthy to enable her to become a mother.

I have seen a myoma disappear after an abdominal section intended for its removal, yet where nothing was done except handling the tumour with the result of deciding that it was irremovable. This experience has been recently confirmed at a

meeting of the Imperial Royal Society of Physicians of Vienna, where Professor von Mosetig "showed a case of myofibroma of the uterus, which was of particular interest, owing to the course of the disease. The history of the case showed that the patient had suffered since February, 1888, from severe pains in the sacral and pelvic regions, as well as from constipation, difficulty in micturition, and severe metrorrhagia. Examination revealed the presence of a solid and elastic tumour, which was quite fixed, and filled the whole pelvis; the tumour filled the posterior cul-de-sac. At the request of the patient, who was anxious to have something done, exploratory laparotomy was performed on October 7th. On opening the abdomen, a solid, elastic tumour, as large as a man's head, and quite immovable, was found; it filled the large and the small pelvis, and was close to the sacrum. When the tumour was exposed it presented a peculiar appearance; it became congested, assumed a dark-red colour, and spontaneous rupture of blood-vessels took place in some spots. As operation was not indicated under such conditions, the abdomen was closed. The abdominal wound healed without any trouble; and the patient said that the pain and discomfort were less than before. When she was examined a second time, fourteen days later, they were not a little astonished to find that the tumour had shrunk to half its former size, being scarcely as large as a child's head, while the posterior cul-de-sac was full, and the tumour had become movable. The tumour continued to diminish in size, so that when the patient was presented to the Society it was scarcely as large as a man's fist. Professor von Mosetig did not know of any similar case in medical literature. He explained the occurrence by the supposition that the disappearance of the myofibroma was due to the intense hyperæmia which had been observed during the operation, just in the same way as soft sarcomata may disappear under the influence of severe erysipelas, &c."

I know of several cases in my own practice where such disappearances have been completely effected; unfortunately, I know of a very much larger number where no such result has been obtained; and, therefore, whilst no dependence can be placed on mere exploratory incision as a method of treatment, this strange fact, coupled with many of a similar kind to be afterwards described, constitutes an argument for the free application of the principle of exploration.

Another case of the kind is now under my observation, and is very worthy of being given in detail for many reasons.

The lady was a Jewess, aged 34, in whom a large myoma had been diagnosed by the late Dr. Schroeder, of Berlin, and others, and in that opinion I certainly agreed when she was brought to me in May, 1888. From the tumour she was suffering very little, and was hardly conscious of its existence,

but she suffered much from a gall-bladder full of concretions, and this was the immediate cause of her being sent to me by Professor Gluge. I performed cholecystotomy a few days after I saw her first, at which time the myoma reached quite half way up to the umbilicus. I did not, of course, go anywhere near the tumour at the time of the operation—did not touch it. I saw her again a fortnight ago (November, 1888), and found to my delight that the myoma had receded into the pelvis, and was certainly not one-third of the size it had been six months before. There could be no other known cause of its reduction than the abdominal section, as no kind of treatment had been directed towards it—as a matter of fact, the patient had forgotten all about it.

The idea of the removal of the uterine appendages for the treatment of uterine myoma occurred to me after the death of two enucleation cases in one week in the year 1871. I was horrified at the catastrophe, and as I witnessed the post-mortem of one of the cases I was struck by the exaggerated size of the tubes and ovaries. This association of diseased conditions of the appendages with myoma has been a frequent experience ever since, and I think there is some relation, as cause and effect, between the two conditions. It struck me as being so at the time I speak of, and remembering that in a case where I had performed double ovariectomy some months before, in a woman blanched by uterine hæmorrhage, I had secured the gratifying result of completely arresting that symptom, it struck me that I might apply that experience to bleeding uterine tumours. I had no opportunity of putting my idea into practice until July 27th, 1872. That woman was cured, but not immediately, as I fancy I did not do the operation as I do now; but she had complete arrest of the hæmorrhage in a few months, and is still alive and well. Since then, and up to the end of 1888, I have performed the operation 272 times, with 12 deaths,* giving an average mortality of 4.41 per cent. In my first series the mortality was 7 per cent. as against 2.03 per cent. in my second series, and if I could secure that all my cases reached me before they were half-dead from mere anæmia, I think the mortality would not be more than one per cent. The whole of my experience in every department of abdominal surgery is one continuous outcry against delay.

On May 24th, 1881, I read a paper on my first thirty cases of the operation before the Royal Medical and Chirurgical Society, but my statements only provoked incredulity, and that conservative body did not even think it worth while to publish my paper. I received their formal thanks without emotion, and sent my

* General Summary of Conclusions from a Series of One Thousand Consecutive Cases of Abdominal Section, 1884. Ditto, Second Series of One Thousand, *British Medical Journal*, 1888.

paper to America, where it was published in the *American Journal of Medical Sciences*, January, 1882, and in the *New World* it at once received the attention which I knew the facts merited. I can now speak calmly of the action of the London Society, but I felt very bitterly about it at the time.

In a paper read at the Cardiff meeting of the British Medical Association in 1885 (*British Medical Journal*, August, 1885) I published in detail the secondary results of my first fifty cases of this operation in which recovery had taken place. In all of them a period of more than two years and a half had passed since the operation, so that there was an interval between the treatment of each case and the report of it quite long enough to give a satisfactory statement of the secondary result. The first point in that paper was to show that removal of the uterine appendages for myoma, when properly performed, is not a fatal operation, but one, indeed, with hardly any mortality at all, even when the tumours are large and the patients are brought almost to death's door by excessive hæmorrhage. I therefore gave a list of fifty-eight cases in which I had operated between the 1st January, 1884, and the 21st July, 1885, without a single death; and I selected that period not because I had experienced a heavy mortality before that, but because it was the latest date up to which my practice had been published in detail. In the series published up to the end of 1883, there were fifty cases of removal of the uterine appendages for myoma, with two deaths, so that up to August, 1885, there was a series of 108 cases, with two deaths. Since then, from July 21st, 1885, up to the present date I have had 154 cases, with only two deaths, so that the mortality of the operation in my hands up to the present moment of publication, exclusive of the earliest work, which in no way represents the *mortality of the operation*, gives ONLY 1·53 PER CENT. Adverse critics have been delighted to rake up my early cases, in which, with less than a score of cases, the mortality was nearly twenty-five per cent.; but I need not say that, as I originated this proceeding, I have had to bear the burden of the blunders inseparable from ignorance—blunders which have helped me not only to mend my own ways, but also to mend the ways of those who came after me, and who have forgotten to credit me with the better results which my misfortunes provided for them.

Let me say here, in relation to statistical investigation of this kind, what I have often had to say upon other and similar occasions—that as early experience must always have unfavourable results, it is perfectly absurd to put a collection of cases derived from the early experience of a large number of operators as giving the mortality of any operation; such a collection is only the mortality of inexperienced operators. The true mortality of the operation can only be arrived at from the operations performed by

the best operator or operators, and even in the case of experienced operators their early instances must be excluded from the true mortality of the operation. All this must be derived from an operator like myself, who has done some hundreds of cases, who has reduced the mortality to the lowest point, and from whose statistics the early blundering must be excluded. In no other way can the proper estimate of the value of the operation be derived. In the paper of which I am speaking, read before the British Medical Association at Cardiff, I gave a list of fifty cases of this operation where recovery had taken place, and I gave a detailed statement of the ultimate results, as far as I was able to obtain them. For the statements concerning a few of the cases I am solely responsible, as they are drawn from personal interviews with the patients; but in every instance where it was possible, the statements are made on the evidence of a practitioner who sent the patient to me for operation, or was associated with me in the responsibility of the case, or under whose cognisance she has been since the operation. The proof of the satisfactory secondary result is so remarkable that I reproduce here in detail the substance of the evidence then submitted.

CASE I.—J. H., aged 40, had been under my care for some twelve months for exhausting hæmorrhage, arising from a myoma which occupied the pelvis. On August 1st, 1872, I removed the appendages, and the patient made an easy recovery. She went to reside very soon after the operation in Cheltenham, at which time I lost sight of her; but in 1874 I heard of her in Bristol, and then in London, and in 1882 she was in Birmingham, when I saw her in perfect health. She had never menstruated since the operation, and the tumour had certainly diminished in size.

CASE II.—E.C., aged 40, was placed under my care by the late Mr. Giles, of Stourbridge. She had suffered for years from menorrhagia, due to a myoma, which could be felt above the brim of the pelvis. I removed the appendages on May 22nd, 1873. I saw the patient in 1876, and ascertained that she had menstruated regularly for a few months after that time, but that it had suddenly ceased and never reappeared. The tumour had diminished in size. The patient now lives in America.

CASE III.—Leamington, Dr. Tomkins, 47, m., op. October 18th, 1879.—“Worcester, July 14th, 1885. My dear Tait,—I have not seen anything of Mrs. ——— for the last three years; but, from what I have heard of her, I believe the results of the operation to have been entirely satisfactory. The hæmorrhage ceased, and the tumour diminished considerably, but I cannot say if it has entirely disappeared. Since the operation she has had fairly good health,

instead of being a chronic invalid, as she was before you removed the appendages.—I am, yours very truly, GEORGE W. CROWE.”

CASE IV.—Stafford, Dr. Tylecote, 52, m., op. November 30th, 1879.—“Great Haywood, Stafford, July 14th, 1885. Dear Mr. Tait, —I am sure you will be glad to hear that Mrs. ———, who was so reduced by repeated attacks of uterine hæmorrhage as on several occasions nearly to have lost her life, and on whom you performed the operation six years ago for removal of the uterine appendages, is now in very good health, capable of taking and enjoying plenty of good exercise, and leading a very active life. In fact, she dated her gradual restoration to health and a life of usefulness from Advent Monday, 1879, the date of the operation. Of the good results of the operation there can be no question, for which we all feel very grateful to you.—Believe me, yours very truly, E. T. TYLECOTE.”

CASE V.—Walsall, Mr. J. Clay, 34, m., op. January 13th, 1880.—The tumour in this case has almost entirely disappeared, the fundus feels very little larger than normal; whilst the tumour originally reached above the umbilicus, and, in order to get the appendages out, I had to make an incision nearly six inches long, the scar of which is still five inches long. She has menstruated regularly ever since the operation, and occasionally the loss is somewhat profuse.

CASE VI.—Southport, Dr. Elias, 48, s., op. January 17th, 1880.—This case has been published in detail. The patient died, about six months after the operation, of cancer of the uterus. The operation completely arrested menstruation.

CASE VII.—52, s., op. March 10th, 1880.—This patient has never menstruated since the operation, and has since the termination of her convalescence led a very active life, and is now in perfectly good health. She is the sister of her medical attendant, and therefore I refrain from giving any testimony from him by name.

CASE VIII.—Leicester, Dr. Clinton, 42, s., op. April 7th, 1880.—This patient has not menstruated since the operation, and is now in perfect health. I saw her on July 11th, 1882, made a careful examination, and could not discover a trace of the tumour.

CASE IX.—Chasetown, Dr. Clarke, 39, m., op. April 22nd, 1880.—I saw this patient on February 6th, 1884. She had never menstruated since the operation, and on examination not a trace of

the tumour could be discovered, although it originally completely filled the pelvis.

CASE X.—Solihull, Dr. Insull, 46, s., op. May 8th, 1880.—The difficulty of removing the appendages in this case was so great that the tumour had to be dragged out through an incision extending more than three inches above the umbilicus, and great difficulty was encountered in getting the tumour back into its position. On September 8th, 1881, the patient was perfectly well, had never menstruated since the operation, and the tumour was about one-third of its original size, for it did not extend much more than half way between the pelvis and the umbilicus. This patient was always a weak-minded semi-imbecile woman, and is now under care in the County Asylum.

CASE XI.—Birmingham, Dr. Drummond, 49, m., op. August 17th, 1880.—Dr. Drummond reported to me, on May 28th, 1881, that this patient was perfectly well, and had never menstruated since the operation. I have been unable to trace her since.

CASE XII.—Coventry, Dr. Fenton, 47, m., op. September 1st, 1880.—I saw this patient for another ailment in June of this year. She had never menstruated since the operation, and the tumour had entirely disappeared.

CASE XIII.—Stourbridge, Dr. H. Smith, 50, s., op. September 2nd, 1880.—“Stourbridge, July 22nd, 1885. Dear Mr. Tait,—Your patient, Miss ———, is now able to take short walks, and to go about a little among the poor of her parish. Before the operation she had not left her room for eleven years. She can even occasionally attend church.—I remain, sincerely, H. HAMMOND SMITH.

CASE XIV.—Bloxwich, Dr. Somerville, 35, m., op. Oct. 20th, 1880.—“Highfield, Bloxwich, July 14th, 1885.—Dear Mr. Tait,—In answer to your enquiries about Mrs. ———, I am glad to say that she is perfectly well; and being the wife of a butcher, where there is lots of work to be done in the shop from Monday morning till Saturday night, when they close at 11 o'clock, I can safely say that, for the last twelve months, she has done more work than you could find two men capable of doing; so that I think her case needs no further comment of mine.—Very faithfully yours, J. H. SOMERVILLE.”

CASE XV.—Birmingham, Mr. J. W. Taylor, 44, s., op. Dec. 15th, 1880.—“July 15th, 1885. My dear Mr. Tait,—When last I saw Miss ———, she had completely recovered. There had been no

hæmorrhage for a long time, and the myoma had practically disappeared.—Yours truly, J. W. TAYLOR.”

CASE XVI.—Coventry, Dr. Plowman, 32, m., op. Jan. 13th, 1881.—She is in perfect health, and feels or suffers nothing from her old complaint. Dr. Pickup was kind enough to hunt up this patient for me, and I saw her on July 23rd, 1885. She has never menstruated since the operation, is entirely free from pain, and in perfect health. She can do all her housework without any trouble, and looks stout and well. The tumour is now not much larger than an orange. At the time of the operation it rose above the pelvic brim.

CASE XVII.—Brierley Hill, Dr. D’Arcy Ellis, 41, m., op. Feb. 5th, 1881.—I saw this patient January 17th, 1883, in perfect health—“a new woman,” she says—and only just a trace of the tumour could then be felt. Dr. D’Arcy Ellis reports: “Brierley Hill, July 24th, 1885. My dear Mr. Tait,—I have seen ——— to-day, and she reports as follows. ‘Since January, 1883, my health has been better than it had been for two years. I can do all my housework, including washing, without suffering any pain, or more than ordinary fatigue. I was quite unable to do my work for three years before the operation. My weight has increased very considerably. I am very thankful that I went to Mr. Tait, as I think the operation saved my life.’ I have taken her statement exactly as it was given to me. I consider her case a ‘triumph of surgery.’ Her pitiable condition and agonising pain had excited the sympathy of all who knew her. She is now quite a transformed creature.—Believe me, yours very truly, H. D’ARCY ELLIS.”

CASE XVIII.—Birmingham, Dr. Kenny, 43, m., op. February 12th, 1881.—“St. Mary’s Square, Birmingham, July 22nd, 1885. Dear Mr. Tait,—Mrs. ———, upon whom you operated for a myoma, first mentioned her symptoms to me about twelve years ago, about two years after her last confinement. She was seen by several consultants, but gradually got worse, and, after spending several months in each of the Birmingham hospitals, went home, as she believed, to die. She was then so anæmic that she could not walk across a room, from the palpitation induced by the effort. She was debarred the small pleasure of looking out of her windows, because of the youngsters in the street calling to each other ‘to come and see the dead woman.’ It is now four years since you operated upon her, and she is going on remarkably well. She is, in fact, as well as ever she was in her life.—Yours sincerely, J. H. KENNY.”

CASE XIX.—Darlaston, Dr. Sutton, 38, s., op. April 20th, 1881.—The details of this case were published in the *Lancet*, October

6th, 1881, as follows:—"Dr. Sutton, of Darlaston, brought a lady to me in March last, suffering from hæmorrhage and retention of urine, due to a large uterine myoma, which was shaped like a cocked hat, the upper apex running up as far as the right kidney, and the lower running into the pelvis. To this peculiarity was due the symptom which gave her most distress—the persistent retention of urine. She was thirty-eight years of age, and unmarried, and the importance of the case was increased by the fact that she was a relative of her medical attendant. The tumour had grown very rapidly, for the symptoms had been in existence only a few months. It was quite fixed in the pelvis, so that nothing could be done by lifting it up by means of a ring; and there was no hope of removing it successfully. I therefore proposed to remove the uterine appendages; and this I did with Dr. Sutton's consent, and in his presence, on the 20th of April last. I was assisted by Mr. Raffles Harmar. The appendages were extremely difficult to find, as they were all down behind the tumour, and for some time I feared I should not be able to reach those of the right side. I succeeded, however, in getting them completely out, removing the Fallopian tube close to the uterine cornu. The tumour I estimated to be about 5lb. in weight. She speedily recovered from the operation. She has just been to see me to-day, and tells me that she has never seen the slightest sign of menstruation since the flow which always follows the operation. The use of the catheter was discontinued within a month of the operation, and to-day there is not a vestige of the tumour to be discovered; it has entirely disappeared.

CASE XX.—Droitwich, Dr. Cuthbertson, 43, m., op. June 15th, 1881.—I saw this patient April 5th, 1883. She had never seen the slightest appearance of menstruation since the operation, and was in perfect health. The tumour had completely disappeared.

CASE XXI.—Birmingham, Mr. Hallwright, 47, m., op. June 17th, 1881.—The details of this case have been published in the *Medical Times and Gazette* for August 2nd, 1884. I received from Dr. Saundby a jar containing the uterus of a woman, aged 47, from whom I removed the uterine appendages for a large myoma, on June 21st, 1881. At that time she was under the joint care of Mr. M. Hallwright and myself, for profuse menorrhagia, accompanied by intense pain. All other efforts having failed to relieve her, her health being completely destroyed and the tumour growing rapidly, I advised the operation. The tumour reached about an inch above the umbilicus, and the upper end of the incision necessary to reach the appendages was almost at that landmark. Dr. George Fyfe, Dr. Savage, and Mr. Raffles Harmar were present at the operation. She made an easy recovery, and never lost a

drop of blood from the uterus after her convalescence, which was completed within a month. She rapidly gained strength and health, and, as she said upon my frequent visits to her, had neither ache nor ail. She happened to live close to my house, and was therefore frequently exhibited to visitors. She has been seen and examined by Dr. Marion Sims, Dr. Battey, and Dr. T. A. Emmett. Ten days ago she suddenly began to suffer from symptoms of intestinal obstruction; and as this resisted all ordinary measures, I opened her abdomen for the second time, last Wednesday, July 23rd. Dr. Sydney Jones, of Sydney, and Dr. Vander Veer, of Albany, were present. I feared, of course, that the obstruction was due to some adhesion of intestine to the stumps of the former operation, but I am glad to say that my fears had no foundation. I performed enterotomy, but she survived the operation only some fifteen hours. Dr. Saundby made the post-mortem examination, and removed the uterus entire. The myoma had shrivelled to the size of a small orange, certainly less than one-tenth of its size three years ago, and there is no trace of ovaries, or tubes, or stumps, or ligatures. The preparation is in the museum of the Royal College of Surgeons.

CASE XXII.—Ironbridge, Dr. Law Webb, 38, s., op. August 25th, 1881.—This patient is in perfect health, and a detailed statement of her case is given further on in the paper.

CASE XXIII.—Wolverhampton, Dr. Pope, 40, m., op. November 19th, 1881.—I saw this patient July 22nd, 1885. She has menstruated only about three times since the operation, at irregular intervals and very slightly, and without pain. She is now in perfect health, able to do any kind of work. The uterus is quite sessile, and not a trace of the tumour to be discovered.

CASE XXIV.—Birmingham, Mr. C. J. Bracey, 36, m., op. January 4th, 1882.—I saw this patient November 22nd, 1883. She had had three very slight periods since the operation, lasting only for a few minutes. The tumour I estimated to be about one-third of its original size.—“155, Hagley Road, Edgbaston, July 15th, 1855. My dear Tait,—When I first saw Mrs. ——— she had been suffering from severe and frequent hæmorrhage, the result of uterine myoma, and was in a desperate condition. I never saw a person more completely blanched, and it was clear that she had but a few months to live unless some change could be effected in her state. She had been given up as hopeless by her own doctor, and her father, a German physician of some eminence, had told her nothing could be done to save her life. I was present when you removed the ovaries and Fallopian tubes, and watched her gradual but steady recovery. Since then I have seen her occasionally, and

she has continued in good health. She has had no return of her hæmorrhage, is unconscious of the existence of any tumour, and presents the colour and appearance of perfect health. She has travelled several times to her German home, and can walk, and work in her garden, and take her share in household duties of an active kind.—Yours truly, CHAS. J. BRACEY.

CASE XXV.—Wolverhampton, Dr. Lycett, 40, m., op. January 4th, 1882.—This patient has menstruated regularly since the operation, but in diminished quantity. The tumour has gone on growing, and is now of a very large size, and the patient is slowly dying from its increase.

CASE XXVI.—Stonehouse, Gloucester, Dr. Eshelby, 37, s., op. January 10th, 1882.—Dr. Watters, of Stonehouse, who succeeded Dr. Eshelby, has been unable to trace this patient.

CASE XXVII.—Conway, Dr. Prichard, 46, m., op. January 29th, 1882.—“Conway, N. Wales, July 16th, 1885. Dear Mr. Lawson Tait,—I saw Mrs. ———, the day before yesterday, in Conway. She is very well; in fact, has not been so well for many years. She is able to go about the small farm-duties she has to do in style. She used to menstruate occasionally, but with very little pain; now it has altogether ceased for the last two months. The appearance of the tumour seems to be much less also.—Yours truly, R. ARTHUR PRICHARD.

CASE XXVIII.—Llandudno, Dr. Nicol, 45, m., op. March 13th, 1882.—I saw this patient in July, 1885. She has never menstruated since the operation, and is perfectly well.

CASE XXIX.—Birmingham, Dr. Gaunt, 40, s., op. March 21st, 1882.—This patient is now engaged as a domestic servant. She has never menstruated since the operation, and the tumour has shrunk to about half of its original size.

CASE XXX.—Birmingham, Mr. Fairley, 45, m., op. March 29th, 1882.—I have seen this patient repeatedly since the operation, the last time only a few weeks ago. She is in perfect health, has never menstruated since the operation, and the tumour has almost entirely disappeared.

CASE XXXI.—Wolverhampton, Dr. Lycett, 45, m., op. March 29th, 1882.—This patient never menstruated after the operation, but she developed malignant disease of the omentum, and died in the August following the operation—that is, five months after. Dr. Totherick supplied me with the details of the post-mortem examination.

CASE XXXII.—London, Dr. Atkins, 33, m., op. April 2nd, 1882.—“ July 14th, 1885. Dear Mr. Tait,—I shall be happy to answer any questions you may wish to put to me, only I must warn you beforehand that, like the needy knife-grinder, ‘Story, sir, I have none to tell,’ for I very soon regained my usual health, and have kept it ever since, I am glad to say.”

CASE XXXIII.—Birmingham, Mr. J. W. Taylor, 44, m., op. April 8th, 1882.—“ 3, The Crescent, July 15th, 1885. My dear Mr. Tait,—I saw Mr. ——— a few days ago. The general health of his wife remains very good, but her mind is still affected, and she remains at ——— Asylum.—Yours truly, J. W. TAYLOR.”

CASE XXXIV.—Dudley, L. T., 21, s., op. April 20th, 1882.—Dr. Bellingham, of Dudley, writes July 22nd, 1885. “ I called to see ———. She was waiting behind a counter, her mother having gone into a small way of business. She told me she was never better in her life, and had no illness she could refer to the condition before the operation. I may add that I never saw her look so well as she did to-day.”

CASE XXXV.—Oxford, Mr. G. Jones, 46, s., op. April 27th, 1882.—“ Birmingham, July 21st, 1885. My dear Tait,—From August 20th to the 25th, 1882, menstruation came on as freely as ever, and again from December 12th to the 22nd. January, 1883, she had a loss which continued for a fortnight, and for three or four days again in February. Since that time she has seen no discharge at all, either menstrual or leucorrhœal. She writes that her health is wonderfully improved, and all pain, irritation, and inconvenience that she has had since the operation have wonderfully decreased during the last six months. I have no doubt that the myoma is now very sensibly diminished, but as I have not seen her since January, 1883, I have had no opportunity of examining her. I may say that since the beginning of 1883 she has performed her usual routine of duties.—Yours very truly, GEORGE JONES.”

CASE XXXVI.—Alfreton, Dr. Fielding, 45, m., op. May 6th, 1882.—I heard from Dr. Fielding two or three days ago that this patient is in a very satisfactory condition, but I have not seen her since the operation.

CASE XXXVII.—Southampton, Mr. Seaton, 44, m., op. June 9th, 1882.—“ Rutland Lodge, Bitterne, Hants, July 17th, 1885. My dear Mr. Tait,—I saw ——— in the summer of 1883, when she called upon me, and expressed herself as quite well, and quite able

to carry on her ordinary duties of domestic service.—Very truly yours, DANIEL SEATON.”

CASE XXXVIII.—Leicester, Dr. Clifton, 35, m., op. June 16th, 1885.—I saw this patient October 15th, 1884; found that she had never menstruated since the operation; the uterus was perfectly sessile, and not a trace of the tumour could be discovered.

CASE XXXIX.—Droitwich, Dr. Spofforth, 35, m., op. June 16th, 1882.—I saw this patient July 27th, 1885. She has never menstruated since the operation. She steadily improved in condition, and is in perfect health.

CASE XL.—Chesterfield, Dr. Hale, 44, m., op. June 27th, 1882.—“Chesterfield, July 15th, 1885. Dear Mr. Tait,—Your patient, Mrs. ———, has never menstruated since the operation; the tumour has very considerably reduced in size, and the cornu which was felt on the right side of the fundus is gone, and it was of considerable size, as I daresay you will remember.—Yours faithfully, THOS. F. HALE.”

CASE XLI.—Birmingham, Mr. Bracey, m., op. July 13th, 1882.—I saw this patient in February, 1885, and found she had menstruated occasionally, but very slightly, only amounting to a show. The myoma had very much shrunk in size.

CASE XLII.—Birmingham, Dr. W. Thomas, 32, m., op. September 9th, 1882.—I saw this patient July 15th, 1885. She has never menstruated since the operation. The tumour has entirely disappeared, and her health is perfect.

CASE XLIII.—Ludlow, Dr. Brooks, 40, s., op. September 29th, 1882.—I saw this patient on June 18th, 1885. She had never menstruated since the operation, and remained quite well until three months ago, when she had an attack of sickness, accompanied by some bearing-down pain, lasting a few weeks. The uterus was found to be quite sessile, and not a trace of the tumour could be discovered. “Ludlow, July 22nd, 1885. Dear Mr. Tait,—I saw Miss ——— yesterday, and made some inquiries as to her condition, and I find she has never menstruated since the operation, and that, apart from some general debility from which she has suffered all her life, she is in perfectly good health. On examination, all I could discover of the myoma (which, if I recollect right, was about the size of a small orange) is a small nodule about the size of a horse-bean, and which is not at all tender to the touch.—Yours faithfully, J. E. BROOKS.”

CASE XLIV.—Rugby, Dr. Mackenzie, 46, s., op. October 20th, 1882.—I saw this patient on May, 21st, 1883. She had not menstruated since the operation, and was in perfectly good health, but the tumour had not altered in any way. She makes her living now as a housekeeper.

CASE XLV.—Hay, Dr. T. Jones, 43, s., op. October 21st, 1882.—“July 16th, 1885. Dear sir,—I am very pleased to tell you that I am quite well. I have not been so well for some years. I have not seen anything of my monthly times for about two years. I have never been unwell more than three times since the operation. I shall ever feel indebted to you for your wonderful cure.”

CASE XLVI.—Bloxwich, Dr. G. Sharp, 18, s., op. November 6th, 1882.—“Walsall, July 14th, 1885. My dear Tait,—The girl has done well; better even than we hoped for.—Yours truly, GWINNETT SHARP.” I examined her July 15th, 1885. She has never menstruated since the operation, and is in very good health. No trace of the tumour is to be discovered.

CASE XLVII.—Birmingham, Dr. Haines, 42, m., op. December 8th, 1882.—I saw this patient July 16th, 1885. She has never menstruated since the operation, except one little show, which occurred about nine months after. She is in perfectly good health, and leads an active life as housewife. The tumour is now not much larger than a clenched fist, lying free in the pelvis with the uterus. Before the operation it reached nearly to the umbilicus.

CASE XLVIII.—Kidderminster, Dr. Lees, 44, m., op. February 12th, 1883.—This patient died suddenly a year after the operation, never having menstruated between the times. The tumour was found to have diminished, and no trace of the ligatures or stumps could be discovered.

CASE XLIX.—Evesham, Dr. Hyde, 44, s., op. February 19th, 1883.—“Leominster, July 25th, 1885. My dear sir,—I have not seen Miss ——— for some time, but the last time I saw her sister she gave a good report of her. She was living at Pembridge, and I have not heard of her changing, but should I get any information of her I will let you know.—Yours very truly, W. E. HYDE.”

CASE L.—Daventry, Dr. T. Forster, 49, m., op. March 16th, 1883.—Dr. Thompson Forster wrote to me July 17th, 1885, concerning this patient: “She has seldom any pain from the myoma, and then only uneasiness; it is now just about the size of a cricket-ball. She has never had any menorrhagia since the

operation, and she has menstruated only twice—once rather freely about the end of June, 1884, and again slightly in February, 1885. There can be no doubt that the operation has been of great benefit to her, making her life fairly comfortable, whereas before it was a burden to her.”

Here, then, we have a series of cases, the earliest of which was nearly thirteen years old, and the latest two and a half. Of the fifty cases, we have failure in only two instances, the details of one of which I had previously already published. It was a case of cancer of the body of the uterus, which I had mistaken for a myoma, or a myoma which became cancerous after the operation. Neither of these alternative suppositions, in the least, can now form an argument against my operation; mistaking malignant for non-malignant tumours is constantly occurring in every department of surgery, and I cannot expect to be free from it. In the second case, menstruation had not been arrested, and the tumour has gone on growing.

To continue the subject of the paper already quoted, I have to tell that two of the patients of my list of fifty were admitted to asylums soon after the operation, but in one case insanity had been quite evident before the removal of the uterine appendages; and in the other it showed itself almost as soon as she was out of the anæsthetic, so that the indirect effects of the operation can hardly be credited with this unsatisfactory result. Indeed, this patient has been carefully watched in a private asylum ever since, and we have become perfectly satisfied that it is one of the instances of anæsthetic insanity, concerning which Dr. Savage, of Bethlem Hospital, has written an interesting paper, and one upon which I shall have something further to say later.

Even if the insanity in these two cases had to be attributed to the operation, I am in a position to set off two cases against them in which pronounced symptoms of mental aberration were completely cured as a direct result of the operation.

In the paper of which I have already spoken as having been presented to the Royal Medical and Chirurgical Society of London, and by them refused publication, and then published in the *American Quarterly Journal of Medical Sciences* for January, 1882, I summarised my conclusions upon several points. The first of these was as follows:—“That, as far as its primary results are concerned, removal of the uterine appendages, for the arrest of intractable uterine hæmorrhage, is an operation which is as easily justified as any of the major operations of surgery.” I can now emphasize this conclusion thoroughly, and extend it. I say that the primary mortality of this operation is so low that it can be justified far more decidedly on that score than any other of the serious operations of surgery.

The second conclusion was to the effect—"That, so far as its secondary results are yet seen, it is an operation which yields abundant encouragement for its further trial." Here, again, the experience of eight years' longer interval enables me to speak far more decidedly than I did at first. The secondary results of this operation are as brilliant as those of any other operation in the whole realm of surgery with which I am acquainted. It saves life and relieves suffering quite as emphatically as the removal of ovarian tumours. Of the fifty cases of which I then gave the secondary results, I could only point to two failures; but even in these a considerable amount of relief was obtained. The second of the two (Case XXV.) was a complete failure, for the operation had only partially checked the hæmorrhage, and it had not in the least degree interfered with the progress of the tumour.

This case proved to have great interest, for this is the subsequent story that was told about it:—"The patient in question, aged 40, was placed under my care by Dr. Lycett, of Wolverhampton, in January, 1882. She had a large myoma, which caused persistent hæmorrhage. For its treatment I proposed removal of the uterine appendages, and proceeded with this operation on February 4th, 1882. I removed the left tube and ovary, as I thought at the time, completely, but the right tube and ovary could nowhere be found, although I extended my incision to the extreme length of seven inches and a half, and pulled the tumour right out of the abdomen. Still I could not find any trace of ovary or tube on the right side. I replaced the tumour, and the patient made an admirable recovery. But neither the growth of the tumour nor the recurrence of menstrual hæmorrhage were in the least degree affected by the operation. In March, 1884, she again came under my care, for the purpose of having the tumour removed. It had increased to nearly three times the size it was in 1882, and her condition was that of extreme debility and anæmia from hæmorrhage. I opened the abdomen in March, 1884, for the purpose of removing the tumour, but the hæmorrhage was so terrific from the adhesions that had to be separated, that I desisted, and closed the wound. The patient went home in about three weeks, with no other hope before her than that of a speedy death. She was one of thirteen cases of which I spoke at a meeting of the British Gynæcological Society, which were then known to me to be in process of death from bleeding myomata. The only remaining interest which I had in the case was the expectation of having a post-mortem examination, to discover, if possible, why my original operation had failed.

One day early in August, 1885, I happened to be in Wolverhampton, and called to see how the patient was, and, to my surprise, found her still alive, and able to get about in a sort of

fashion, the hæmorrhage still going on, and certainly no kind of improvement effected in her condition. The tumour had grown till it occupied the whole abdomen, and interfered very much with her breathing. The patient was extremely thin, and of a ghastly white colour. She is a woman of remarkable pluck, and when I suggested to her that, if she liked, I would try the operation of removal of the tumour once more, explaining to her that I would complete the operation, no matter at what cost, she yielded a ready assent. Therefore, again, on September 5th, 1885, I opened the abdomen, and this time succeeded in removing the tumour, which was somewhere about 40lbs. in weight. The adhesions were chiefly in front, and the tumour itself proved to be, as I had all along suspected, one of the soft œdematous myomata, occupying the anterior wall of the uterus, the tumour lying quite in front of the cavity of the uterus, which measured 9 inches in length and $3\frac{1}{2}$ inches in width at the base. After the removal of the tumour about four quarts of serum exuded from it in the course of a few hours. The pedicle was broad, and easily secured by a clamp. The patient made a rapid and easy recovery. Very careful examinations of the tumour were made by several independent observers, and we came to the conclusion that there was no aperture on the right cornu of the uterus, and that there was no trace of right ovary or tube. The aperture on the left cornu of the uterus was large enough to admit a No. 5 catheter, and there was more than two inches of the left Fallopian tube outside, which had not been removed at the original operation. No trace could be discovered of the left ovary. This organ fortunately I had preserved, and when I examined the organ that had been removed on January 4th, 1882, I found that its removal had been complete, but that only about one inch of the outer end of the left Fallopian tube had been removed with it. Here therefore, we had an extremely curious condition. The appendages on the right side were congenitally absent, the failure of the removal of the uterine appendages to arrest the growth of this tumour had always been regarded by me as due to the fact that the tumour was one of the soft œdematous myomata, and I had alluded to the case more than once as being the only real failure in my experience up to the time of observation. Now, the evidence is that the failure of the operation was due not to the peculiar nature of the tumour, but to the fact that I did not completely remove the only Fallopian tube of which the woman was possessed.

Up to that time I had repeatedly spoken of three cases in my experience where I had failed to arrest the growth of uterine tumours by removal of the appendages, and in all three cases I had regarded the reason of my failure as being due to the nature of the tumour, that of soft œdematous myoma. Since then I have had three failures of a similar kind, and so far I have only had an

opportunity in one of the cases of those of which I am now speaking, of verifying the accuracy of my opinion, and it is quite open to a difference of opinion as to whether my failure in this case was due to the incomplete operation or to the nature of the tumour. The three other cases yet await investigation, either by a second operation or by a post-mortem examination, as to the real cause of failure. I may add that now (January, 1889) the patient whose case I have just given in detail is in perfect health.

Of the rest of the fifty cases previously narrated, four have died from other causes since the operation, but I know that forty-one still continue—now nearly six years since the date of the last of them—in perfect health; and in the majority of cases immediate arrest of menstruation has been secured by the operation. In seventeen cases I know that the tumours have entirely disappeared, and in fourteen they have been so materially diminished in size as to remain perfectly harmless.

My more recent experience has been still more favourable, for my recoveries are now far more prompt and the arrest of hæmorrhage more immediate; and I feel perfectly justified in saying that in this operation we have one of the most valuable additions to surgery which has been made in recent years.

The details of the operation for removal of the uterine appendages for myoma, as well as those of hysterectomy, will be considered in their appropriate order.

The following is a list of all the cases of uterine myoma in which I have removed the appendages since December, 1880, to the time of writing (February, 1889). I give it for the purpose of authenticating the conclusions I have arrived at, and of showing more of the method in which I view statistics. This collection of cases displays what we may reasonably regard as the true mortality of the operation up to the present time—a conclusion which certainly will never be arrived at by selecting groups of operations performed by a large number of different operators and massing them together. I may say that in the arrangement of these cases many occur which it is very difficult to place properly. Thus, in quite a large number of my operations I have found double pyosalpinx as well as myoma, when the operation has been performed really with the intention of removing the appendages for the myoma, no opinion having been arrived at that there was pyosalpinx as well.

As I regard pyosalpinx as a much more serious disease than myoma, and removal of the appendages for the inflammatory condition a more serious undertaking than their removal for myoma, I have kept such complicated cases for the class which seems to me the one of greater severity. No such complicated cases, therefore, are recorded here: they will be found in another table under the heading of pyosalpinx or hydrosalpinx, as the case

may be. Their removal, however, does not in the least degree affect the mortality of the operation for myoma, as will be seen in referring to the said tables :—

No.	Residence.	Medical Attendant.	Age.	M. or S.	Date.	
1	Birmingham	Dr. Taylor ..	44	S	1880. Dec. 18	R
2	Coventry	Dr. Plowman	32	M	1881. Jan. 13	R
3	Birmingham	Dr. Kenny	43	M	Feb. 12	R
4	Darlaston	Dr. Sutton	35	S	April 4	R
5	Droitwich	Dr. Cuthbertson	43	M	June 15	R
6	Birmingham	Mr. Hallwright	47	M	" 17	R
7	Ironbridge	Dr. Webb	38	S	Aug. 25	R
8	Birmingham	Dr. Kenny	43	S	" 27	R
9	Wolverhampton...	Dr. Pope.....	40	M	Sept. 19	R
10	Broseley	Dr. Bartlam	51	S	Oct. 4	R
11	Birmingham	Mr. Bracey.....	36	M	1882. Jan. 4	R
12	Wolverhampton...	Dr. Lycett	40	M	" 4	R
13	Gloucester	Dr. Eshelby	37	S	" 10	R
14	Conway	Dr. Prichard	46	M	" 29	R
15	Llandudno	Dr. Nicol	45	M	Mar. 13	R
16	Birmingham	Dr. Gaunt ..	44	S	" 21	R
17	Birmingham	Mr. Fairley	45	M	" 29	R
18	Wolverhampton...	Dr. Lycett ..	40	S	" 31	R
19	London	Dr. Louisa Atkins..	33	M	April 11	R
20	Birmingham	Dr. Taylor	44	M	" 8	R
21	Dudley	L. T.	21	S	" 20	R
22	Oxford.....	Dr. Jones	46	S	" 27	R
23	Altreton	Mr. Fielding	45	M	May 6	R
24	Southampton	Dr. Seaton	44	M	June 9	R
25	Leicester.....	Dr. Clifton.....	35	M	" 12	R
26	Droitwich	Dr. Spofforth.....	35	M	" 16	R
27	Chesterfield	Mr. Hale	44	M	" 27	R
28	Birmingham	Mr. Bracey	45	M	July 13	R
29	Birmingham	Dr. Thomas	32	M	Sept. 9	R
30	Ludlow	Dr. Brooks.....	40	S	" 29	R
31	Rugby	Dr. Mackenzie	46	S	Oct. 20	R
32	Hay	Mr. Taltourd Jones..	42	S	" 21	R
33	Bloxwich.....	Dr. Sharpe	18	S	Nov. 16	R
34	Birmingham	Dr. Haynes	42	M	Dec. 18	R
35	Kidderminster ...	Dr. Lees	44	M	1883. Feb. 12	R
36	Evesham.....	Dr. Hyde	44	S	" 19	R
37	Daventry	Mr. Forster.....	49	W	Mar. 16	R
38	Birmingham	Mr. Hoare	39	M	April 19	R
39	Leicester.....	Dr. Marriott	49	M	May 17	R
40	Birmingham	Dr. Madden	43	W	" 22	R
41	Stone	Dr. Tylecote	35	S	" 25	R
42	Monmouth	Dr. Woollett	45	M	July 2	R
43	Melton Mowbray..	Mr. Emmerson	28	M	" 13	R
44	Rugeley	Dr. Monekton	45	M	" 19	R
45	Coventry	Dr. Davidson	44	M	" 28	R
46	Birmingham	L. T.	40	M	Sept. 29	R
47	Keswick	Dr. Knight.....	35	M	" 29	R
48	Durham	Mr. Stewart	39	M	Oct. 5	R
49	Leamington	Dr. Thursfield	42	M	Dec. 8	R
50	Newport	Dr. Davies	40	M	" 11	R

No.	Residence.	Medical Attendant.	Age.	M or S.	Date.	
					1884.	
51	Darlaston	Dr. Totherick	30	M	Feb. 20	R
52	Monmouth	Dr. Marsh	38	M	" 21	R
53	Leicester	Dr. Clifton	34	S	" 29	R
54	Leeds	Dr. Hunter	47	M	Mar. 2	R
55	Birmingham	Dr. Ward	29	M	" 27	R
56	Birmingham	Dr. Wislon	37	M	" 28	R
57	Cannock ..	Mr. Blackford	33	S	April 5	R
58	Kidderminster ..	Mr. Holyoake	46	M	" 9	R
59	Kendal	Mr. Green	30	M	" 18	R
60	Wolverhampton...	Dr. Underhill	40	M	" 22	R
61	Ripley	Mr. Allen	42	M	" 23	R
62	Leamington	Dr. Smith	44	M	" 25	R
63	Leamington	Dr. Thursfield	40	M	" 26	R
64	Hereford	Mr. Vevers	40	M	May 16	R
65	Birmingham	Dr. Wilson	39	M	" 17	R
66	Newport, Mon. ...	Dr. Davies	44	M	" 30	R
67	Ross	Mr. Norman	44	M	June 3	R
68	Birmingham	L. T.	37	S	" 6	R
69	Bromyard	Mr. Horton	36	M	July 9	R
70	Nottingham	Mr. Euan Smith ...	46	M	" 10	R
71	Wolverhampton ..	Dr. Lycett	45	M	" 22	R
72	Sutton, Surrey ...	Mr. Benson	48	S	" 31	R
73	London	Dr. Armitage	44	S	Oct. 4	R
74	Llantrissant	Dr. Davies	46	M	" 15	R
75	Birmingham	L. T.	39	M	" 21	R
76	Coventry	Dr. Partridge	30	M	Nov. 3	R
77	Walsall	L. T.	42	M	" 10	R
78	Brighton	Dr. Bluett	35	S	" 12	R
79	Nottingham	Dr. Howitt	41	M	" 13	R
80	Manchester	Dr. Lee ..	38	M	" 17	R
81	Birmingham	L. T.	43	M	" 25	R
					1885.	
82	Birmingham	L. T.	42	M	Jan. 12	R
83	Cheltenham	Dr. Cardew	33	S	" 23	R
84	Wakefield	Mr. Statter	42	M	" 26	R
85	Birmingham	Mr. Leech	35	M	Feb. 10	R
86	Not'ingham	Mr. Euan Smith ...	44	M	" 14	R
87	Tamworth	Dr. Ruston	43	M	Mar. 17	R
88	Oswestry	Mr. Cartwright	50	M	" 20	R
89	Leicester	Dr. Clifton	28	M	" 30	R
90	Newport, Mon. ...	Dr. Thomas	47	M	April 14	R
91	Evesham	Dr. Gibbs Blake ...	34	S	" 14	R
92	Birmingham	Dr. O. W. Barra't..	44	M	" 24	R
93	Birmingham	Dr. Hoare	45	M	May 11	R
94	Shifnal	Dr. Mayer	29	M	" 23	R
95	Birmingham	Drs. Newton and Alldridge	34	M	June 1	R
96	Redditch	Mr. Mathews ..	59	M	" 11	R
97	Birmingham	Mr. Harmar	36	M	" 12	R
98	Wolverhampton...	Dr. Scott	36	M	" 25	R
99	Ireland	Dr. Barnardo	34	M	" 26	R
100	Birmingham	Mr. Prosser	32	M	" 27	R
101	Leicester	Mr. Griffiths	47	N	July 4	R
102	Salop	Dr. McCarthy	42	M	" 7	R
103	Birmingham	Mr. Whitcombe	33	M	" 8	R
104	Oswestry	Dr. Lewis	36	M	" 8	R
105	Oxford	Dr. Tuckwell	35	M	" 14	R

No.	Residence.	Medical Attendant.	Age.	M. or S.	Date.	
106	Dawley, Salop ...	Dr. Soame	47	M	July 17	R
107	Smethwick	Dr. Jackson	44	M	" 17	R
108	Rugby	Dr. Duke	46	M	" 21	R
109	Birmingham	Dr. Hickinbotham ..	27	M	Aug. 4	R
110	Nottingham	Dr. Elder	46	M	" 5	R
111	Smethwick	Mr. Langley Browne	31	M	" 10	R
112	Birmingham	Dr. Taylor	27	M	" 12	R
113	Crewe	Dr. Hodson	44	M	" 13	R
114	Pittsburgh, U.S.A.	Dr. Ballenden	40	M	" 21	R
115	Birmingham	Dr. Ravenhill	34	M	" 27	R
116	Birmingham	L. T.	33	M	" 29	R
117	Birmingham	Dr. Clay	25	M	" 29	R
118	Chester	Dr. King	32	M	" 29	R
119	Wolverhampton ..	Dr. Scott	34	M	Sept. 5	R
120	Birmingham	Dr. Taplin	35	M	" 5	R
121	Exmouth	Dr. Cox	33	M	" 18	R
122	Dresden	Dr. Meinert	48	S	" 18	R
123	Rugby	Dr. Simpson	33	M	" 21	R
124	Birmingham	Dr. Underhill	32	S	" 24	...
125	Cirencester	Mr. Fowler	47	S	" 25	R
126	Birmingham	Mr. Fairley	38	S	" 25	R
127	Nottingham	Dr. Taylor	53	M	Oct. 17	R
128	Abergele	Dr. Griffiths	44	M	" 19	R
129	Birmingham	L. T.	44	M	" 20	R
130	Manchester	Dr. Rodgers	36	S	" 24	R
131	Birmingham	L. T.	33	M	" 30	R
132	Elland	Dr. Denning	41	M	Nov. 5	R
133	Birmingham	Mr. Hallwright	40	M	" 11	R
134	Birmingham	Dr. Gibbs Blake	40	M	" 13	R
135	Manchester	Dr. Hammond	49	S	Dec. 4	R
136	Edinburgh	Dr. Croom	36	M	" 20	R
137	Willenhall	Dr. Hartill	30	M	" 29	R
1886.						
138	Birmingham	Dr. Drury	25	S	Jan. 9	R
139	Birmingham	Dr. R. Morris	28	S	" 9	R
140	Rugby	Dr. Duke	43	M	" 15	R
141	London	Dr. Orwin	46	M	" 22	R
142	Cleckheaton	Dr. Sykes	44	M	" 24	R
143	Birmingham	L. T.	36	M	Feb. 10	R
144	Nottingham	Mr. Euan Smith	37	M	" 26	R
145	Nottingham	Dr. Marshall	41	M	Mar. 1	R
146	Stone	Dr. Fernie	36	M	" 5	R
147	Birmingham	Dr. Madden	34	M	" 8	R
148	Birmingham	Dr. Shaw	23	M	" 15	R
149	Monmouth	Dr. Woollett	32	M	" 29	R
150	Conway	Dr. Roberts	51	M	" 30	R
151	Holbeach	Dr. Harper	31	M	April 2	R
152	Wolverhampton ..	Dr. Green	32	S	" 27	R
153	Leominster	Dr. Barnett	38	M	May 5	R
154	Coventry	Dr. Pickup	42	S	" 6	R
155	Birmingham	Dr. Underhill	29	M	" 14	R
156	Birmingham	L. T.	22	M	" 17	R
157	Birmingham	Dr. Newton	39	M	" 17	R
158	Birmingham	L. T.	40	M	" 19	R
159	Stratford-on-Avon	Mr. Nason	39	M	" 21	R
160	Birmingham	Dr. Gibbs Blake	30	S	" 28	R
161	Birmingham	Dr. Madden	37	M	" 29	R
162	Birmingham	Dr. Taylor	28	M	June 21	R

No.	Residence.	Medical Attendant.	Age.	M or S.	Date.	
163	Birmingham	Dr. Hogg	36	M	June 25	R
164	Birmingham	L. T.	28	M	" 27	R
165	Leominster	Dr. Barnett	31	S	July 1	R
166	Newport	Dr. Woollett	28	M	" 17	R
167	Bristol	Dr. Laurence	35	M	" 21	R
168	Coventry	Dr. Pickup	42	S	" 22	R
169	Stourbridge	Dr. Mellwrath	42	M	" 28	R
170	Birmingham	L. T.	31	M	Aug. 17	R
171	Festiniog	Dr. Roberts	43	S	" 18	R
172	Birmingham	Dr. Clark	40	M	" 20	R
173	Birmingham	Dr. Clark	35	M	" 21	R
174	Birkenhead	Dr. Floyd	43	S	" 21	R
175	Birmingham	Dr. Hopkins	43	M	Sept. 11	R
176	Merthyr Tydvil	Dr. Ward	33	M	" 15	R
177	London	Dr. Grigg	38	M	" 16	R
178	Atherstone	Dr. Herring	32	M	" 17	R
179	Montgomery	Dr. Roberston	45	M	" 27	R
180	Amsterdam	Drs. Heymans and Parvé	44	S	Oct. 5	R
181	Birmingham	Dr. Clark	32	S	" 8	R
182	Scarborough	Dr. Flint	42	S	" 25	R
183	London	Dr. Duke	37	W	Nov. 10	... D
184	Banbury	Dr. Thomson	43	S	" 26	R
185	Llandudno	Dr. Davies	36	M	Dec. 6	R
1887.						
186	* Crickhowell	Dr. Jones	35	M	Jan. 7	R
187	Derby	Dr. Ogle	48	M	" 19	R
188	Wimbledon	Dr. Parkinson	31	M	" 22	R
189	Bolton	Dr. Gillibrand	36	S	" 26	R
190	Cheltenham	Dr. Kirkland	32	M	Feb. 3	R
191	Accrington	Dr. Hauna	41	S	" 12	R
192	Bristol	Dr. Grace	30	S	" 15	R
193	Birmingham	Dr. Clark	24	S	Mar. 8	R
194	Gloucester	Dr. Needham	34	W	April 14	R
195	Alfreton	Dr. Pegler	32	M	" 15	R
196	Alcester	L. T.	30	S	" 22	R
197	Northfield	Dr. Wood	37	S	May 3	R
198	Birmingham	Mr. Sumner	43	M	" 11	R
199	Huddersfield	Dr. Porritt	24	S	" 23	R
200	Leicester	Dr. Johnston	26	M	" 24	R
201	Clun	Dr. Cox	38	M	June 2	R
202	Stafford	Dr. Cookson	46	M	" 10	R
203	Walsall	Dr. Willmore	29	S	" 13	R
204	Dudley	Dr. Bradley	29	M	July 13	R
205	Birmingham	Dr. Boddy	31	M	" 14	R
206	Southsea	Dr. Axford	43	S	" 18	R
207	Warrington	Dr. Adams	26	M	" 19	R
208	Redditch	Dr. Smith	44	M	" 25	R
209	Salisbury	Dr. Straton	39	M	" 30	R
210	Ravestone	Dr. Hatchett	39	S	Aug. 19	R
211	Hexham	Dr. Stainthorpe	28	M	" 31	R
212	Birmingham	Dr. Newton	37	M	Sept. 7	R
213	Birmingham	Dr. Madden	49	M	" 15	R
214	Birmingham	L. T.	29	M	" 16	R
215	Newport	Dr. Morgan	38	M	" 29	R
216	Barrow-on-Trent	Dr. Knipe	29	S	Oct. 11	R
217	Holmfirth	Dr. Martin	47	W	Nov. 1	R

* Tumour afterwards expelled.

No.	Residence.	Medical Attendant.	Age.	M. or S.	Date.	
218	Market - Weighton	Dr. Jefferson	42	s	Nov. 16	R
219	Kidsgrove	Dr. Strickland	39	w	Dec. 1	R
					1888.	
220	Measham.....	Dr. Sommerville ..	45	s	Feb. 2	R
221	Lyston.....	Dr. Clifton.....	30	M	" 10	R
222	Stafford	Dr. Marsh	48	M	" 29	R
223	Birmingham ..	L. T.	36	M	Mar. 8	R
224	Rugby	Dr. Duke	50	M	April 25	R
225	Birmingham ..	L. T.	44	M	" 27	R
226	Birmingham ..	L. T.	38	M	May 7	R
227	Birmingham ..	L. T.	39	M	" 17	R
228	Worcester	L. T.	36	M	" 31	R
229	Birmingham ..	L. T.	42	M	June 1	R
230	King's Lynn ..	Dr. Ploughwright..	32	M	" 16	R
231	Leicester	Dr. Clifton	30	s	" 20	R
232	Torquay	Dr. Hope	47	M	July 9	R
233	Birmingham ..	L. T.	36	s	" 20	R
234	Claverdon	L. T.	37	M	Aug. 11	R
235	Kidderminster ..	Dr. Langford	30	M	" 23	R
236	Liverpool	L. T.	48	s	" 23	R
237	Burton-on-Trent..	Dr. Hooper	43	M	Sept. 13	R
238	London	L. T.	29	s	" 27	R
239	Cannock	Dr. Butter	28	s	Oct. 12	R
240	Newport	Dr. Marsh	36	M	" 15	R
241	Droitwich	Dr. Fitch	38	M	" 18	R
242	Cannock	Dr. Butter	46	M	" 19	R
243	Colorado	Dr. Ambrook	41	M	" 22	R
244	* Southampton ..	Dr. Bullar	42	s	" 27	R
245	Rugby	L. T.	39	s	Nov. 1	R
246	Kington	Dr. Pope.....	46	s	" 1	... D
247	Nottingham	L. T.	43	M	" 2	R
248	Alvechurch	Dr. Clark	35	M	" 8	... D
249	Hereford	Mr. Vevers.....	36	K	" 14	R
250	Birmingham ..	Mr. Hallwright ..	38	M	" 14	R
251	Willenhall	Dr. Hartill	34	s	" 28	R
252	Staleybridge	Dr. Clarke	43	M	Dec. 1	R
253	Worcester	Mr. Fowler.....	27	s	" 6	R
254	Llanarth	Dr. Evans	39	s	" 13	R
255	Great Bridge	Mr. Price	32	M	" 18	R
					1889.	
256	Burslem	L. T.	26	M	Jan. 16	R
257	Huddersfield	Mr. Robinson.....	33	s	" 17	R
258	Huddersfield ..	Mr. Robinson.....	35	M	" 19	R
259	Hull.....	Drs. Holder and Hollingsworth	45	M	" 19	R
260	Hull.....	Dr. Jackson	36	M	" 21	R
261	Birmingham ..	Dr. Wilson.....	33	M	" 22	R
262	Tamworth	Dr. Buxton	40	s	Feb. 2	R

* Large portion of tumour afterwards expelled.

ANALYSIS OF CASES ACCORDING TO AGE.	NO. OF CASES.
Under 20.....	1
From 20 to 30	29
From 30 to 40	113
From 40 to 50	113
Fifty and upwards	6

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The preceding analysis of the cases placed according to age shows that the time of life has an overwhelming influence in the production of uterine myomata. I think it more than likely that the one patient under 20 had a tumour of the soft œdematous character, and I am perfectly sure that many of those between 20 and 30 suffered from this variety. I am still hovering in doubt as to whether removal of the appendages is as perfectly satisfactory in the soft œdematous myomata as in the hard multi-nodular, and it will only be a careful observation of the progress of those cases operated upon under 30 years of age which will establish a conclusion in the one direction or the other upon this point. The influence of this operation upon hard multi-nodular myomata is beyond a doubt perfectly effectual. In only three instances has there been anything, so far as I know, worth noticing in the after history of the cases. In two of these, marked by an asterisk, the tumours were reduced remarkably in size, then the hæmorrhage recurred; this recurrence being explained and completely relieved by the birth and removal of a polypus. No doubt what had happened was that in the original condition of the tumour there had been an intra-uterine polypoid growth associated with many other nodules, and that the polypus was incapable of being extruded so long as the other nodules existed. When these disappeared the protrusion of the polypoid nodules was possible, and was accomplished. In a third case—that in which I operated at the request of Dr. Halliday Croom, of Edinburgh—hæmorrhage was arrested for some considerable time, and then resumed its progress till it brought about the patient's death. No explanation of this was arrived at, because no post-mortem examination was obtained. I am disposed to believe it was due to one of two conditions: either that a nodule became polypoid and was not extruded, or the disease became malignant. A fourth case I have not included in the table on account of the difficulty of deciding exactly in what category it is to be placed. The patient was sent to me from Dublin, having been under the care of Dr. Lombe Atthill. She was 30 years of age, and had a large smooth myomatous increase of the uterus; I removed the appendages and the patient had no bad symptoms at all till the sixth day, when the cervix began to dilate and the uterus made violent efforts to expel the tumour. As the patient was perfectly virginal and very anæmic, and the tumour well above the brim, I believed the birth of the tumour to be absolutely impossible. I therefore reopened the abdomen and performed hysterectomy, with a fatal result. The tumour proved to be of the soft œdematous variety.

I think it hardly fair to reckon this as a death from removal of the appendages, and yet that operation was certainly not quite clear from the responsibility of the fatal issue. The case shows how easy it is to bring about an expulsive effort in this form of

disease, and when the tumour is as large as it was in this instance nothing but hysterectomy probably will give a satisfactory result ; though here again, as I said above, the question is not yet ripe for settlement.

The fact is that we must begin to study anew this interesting disease, altering altogether our previously conceived and entirely erroneous opinions that it is a disease not of much consequence, but one which may be left alone. It is, on the contrary, an extremely fatal disease, productive of very much suffering and loss of health. During the last four or five years many claims have been made for the reintroduction of its treatment by the electrical current and other ways, none of which have proved to be in the least degree novel, though many new names and new statements have been introduced in connection with them. This method has, in this country, received a perfectly fair trial, and nothing has been secured by it except disaster ; tumours have been made to slough out, and in a few instances patients have recovered, but the great majority of them have died, so that we have a confession on this part that whilst surgical interference is necessary it must become a matter for careful conclusion in which direction the interference should be made most effectually and with least risk. When the electricians can contribute a complete and fully-stated list such as mine is, with as few records of disaster, they will have some claim to be heard ; but even what they have done has been in no way substantiated in this manner, and no evidence is forthcoming that the benefit arrived at by arrest of hæmorrhage and reduction of size of the tumour is more than temporary, whilst it is perfectly certain that the proportion of disasters is very much higher.

My own experience of dealing with uterine myoma a great many years ago by means of the electrical current was precisely in this direction, so that personally I have not engaged in any way in the recent effort for its reintroduction, for the simple reason that I have no wish to complicate my own researches.

If it should prove in future that uterine myoma can be cured and its symptoms relieved permanently by any means short of surgical operation no one will rejoice more thoroughly than I shall, for it will mean that our art has made still further progress. As the matter stands at the time of my writing there seems to be no prospect of this, and we have to be satisfied, at least for the time being, with the successful results of our surgical proceedings.

V.

THE BROAD LIGAMENTS.

THE usual anatomical statement that there are two broad ligaments instead of one has certain advantages in pathology which are sufficient to justify us in retaining it as a method of description. It is, however, not quite accurate, and occasionally it introduces a slight confusion. The real fact is that the two broad ligaments consist of but one fold of peritoneum, in which are invested the uterus and its appendages, together with certain survivals of foetal structure which happen to be symmetrical, or nearly so. But the experiments of disease often display the fact that this fold is not truly separable into two parts, though the symmetry of its bilateral contents often lead us to forget or overlook the fact.

At first sight it would almost seem absurd to devote a special chapter to the broad ligaments, a mere flexure of serous surface, by no means well defined in extent, but very constant in character and relations, and differing in function in no way, so far as is known, from any other part of the peritoneal layers.

In the male the broad ligament is a mere representative structure, recognisable only by the transcendentalist, and it has, so far as I know, not the slightest pathological importance peculiar to itself. But I doubt if there is any other organ of the body of so much importance in women; there is certainly no structure which bears so strongly on the differentiation of pathological changes taking place in its neighbourhood, and I am equally clear that it has a surgical importance in the special diseases of women which cannot be exaggerated.

The broad ligament (taking its two halves for the moment as one) is formed by the peritoneum which has descended as one fold from the base of its mesenteric union into the pelvis in front of the rectum, sacrum, and great vessels, forming at the lowest point of its descent the "pouch of Douglas." The floor of this cul-de-sac corresponds with a small portion of the posterior flexure of the vagina—a fact often forgotten by those unaccustomed to pelvic surgery, and forgotten with disastrous results.

In the middle line the peritoneum rises upwards and forwards on to the posterior wall of the uterus, and passes over that organ, dipping down over the front wall for quite two-thirds of its extent, thence passes over the base of the bladder on to the anterior abdominal wall, making in this course the anterior or vesico-uterine peritoneal cul-de-sac. All these relations are so variable in extent that no common description can be given of them; for sometimes the anterior cul-de-sac will be found almost as capacious as that behind the uterus, whilst in other cases it is hardly represented at all. But its importance must never be forgotten, especially in cleansing out the peritoneum when it has been the seat of purulent inflammation, or an accumulation of débris from any other cause.

On each side of the uterus the peritoneum rises over the Fallopian tube and passes a short distance in front of it, and again in front of the round ligament of the uterus, here sometimes forming supplemental folds of great importance; but these vary in extent very greatly in different women. Further onwards, on each side and at the outer wall of the bladder, the peritoneum rises abruptly to the anterior abdominal wall, whilst the posterior layer goes obliquely upwards to the brim of the pelvis. In this way the free peritoneal surface forms two cups of different sizes, depths, and shapes, ovoid in circumference, and irregularly based according to many varying circumstances. Thus, when the bladder is distended the anterior basin is filled up, and this it may be also by a tumour of the bladder or the uterus. The retro-uterine cavity may not exist by reason of defective development of the peritoneum, or it may be destroyed entirely and permanently by the adhesions of a retroverted uterus. It may also be filled up by the occurrence of a broad ligament hæmatocoele, by the occurrence of a uterine tumour, or of a tumour originating in the cavity of the broad ligament, or an abscess in the same part. Finally, these two cavities may be imitated in the allantoic cyst (remnant of the original cavity—retained after the separation of the splanchnopleure) without having a particle of peritoneal surface near them. (See chapter on Congenital Cysts.)

Withal, it must be borne in mind, these cavities, both ante-uterine and retro-uterine, exist more in the eye of the dissector than in nature, for under normal circumstances they are practically closed and contain little. But in diseased conditions they contain much, especially that behind the uterus; and these contents may be of the most vital importance, and be most difficult of discrimination.

At the central point of each wing of the broad ligament its folds are practically in contact, though lying between these are many structures of interest and importance. From the uterus and towards this central point these layers (theoretically) approach one

another, and between these and near the uterus lies some small amount of cellular tissue to which a most undue and altogether undeserved importance has been attached. From the central point outwards the layers tend to separate again, and when they separate they actually do contain between them an appreciable amount of cellular tissue to which sufficient importance has not yet been given. The anterior layer runs off to the pelvic wall on the curve of the anterior basin (the vesico-uterine pouch), whilst the posterior layer runs off on the curve of the posterior basin (Douglas's cul-de-sac).

We shall find that the dissections made by diseased growths can remove this complicated set of plications and put them into a single stretch of membrane, better even than the dissector's knife could do it. Then we have the two surfaces of the membrane alone to speak of—the serous and the cellular tissue side, the intra- and the extra-peritoneal surfaces of the membrane.

I need not remind my readers that, save for the opening of the infundibulum of the Fallopian tube, the peritoneum is a closed cavity—not only closed in the sense of having no opening into it, but closed in a sense that can be understood and thoroughly realized only when a frozen section has been made before the body has been opened in any way, and carefully examined. Then it is seen how erroneous dissecting-room notions of the relations of organs really are, conveying, as they do, ideas of disassociation rather than those of normal relations. No matter what the training of the student be—even if both methods be combined—it is by no means easy to get a practical notion instilled into the mind of the enormous practical importance of the broad ligaments, and as to what really is meant in speaking of them by the phrases “extra-peritoneal” and “intra-peritoneal.”

To the beginner the phrases seem to be self-contradictory, and even to those who believe they know a great deal about this subject it is perfectly clear that those phrases are elements of the utmost confusion. How anything, such as an ectopic pregnancy, can be in the cavity of the broad ligament and be extra-peritoneal is a puzzle to those who do not know the anatomy of the pelvis thoroughly; but even to many of those who do know it, the rupture of the broad ligament and the escape of the ovum into the cavity of the peritoneum seems to be a matter past comprehension.

There is of course no real *cavity* of the broad ligament: the phrase is one used only to express the fact that there is a space, practically of microscopic size, containing organs which are of much embryological interest, and often of great pathological importance. First of all there is the Fallopian tube, to which I have devoted a special chapter later on, and therefore, as with its associate the ovary, I need say no more about it here. Attached

by a long pedicle to one of the fimbriæ of the Fallopian tube is a small cyst, stupidly called the "hydatid" of Morgagni, which is the only structure in the pelvis which never, as far as I have been able to observe, obtains any pathological importance. Between the folds of the broad ligament lie the tubules of the parovarium. The main tube, known as Gartner's duct, lies somewhat horizontally, and seems generally to arise in an ampullary dilatation (the organ of Rosenmüller), which I have seen developed into a cyst of large size. A varying number of ventral tubules run from below upwards into the horizontal tube, like the branch field-pipes into a main agricultural drain. They are often broken in their course by closures of the tubes, and in this way they seem ready to develop into pathological cysts. That a very large proportion of what are called parovarian cysts, or cysts of the broad ligament, arise in this way is entirely beyond doubt; but this simple explanation by no means applies to all. The true parovarian cyst has certain characters by which it can, I believe, always be recognized, and its surgical as well as its pathological relations are quite peculiar and far more serious than are usually supposed. The epithelial lining of such cysts, even in their early stages, shows an activity which is most remarkable. The cells are irregular in size and often in form, often ciliated, but incompletely so, and they evince an immaturity of growth which I hold to be the only characteristic of malignant disease. When the tumours have reached large size this epithelial proliferation becomes dendritic and papillomatous, and some of these simple-looking tumours are amongst the most malignant things I have met with. I have removed a perfectly simple-looking parovarian cyst from a young girl—a cyst in which not even papillomatous nor dendritic growths were visible—and that poor child had cancer in the pelvic glands perceptible in six weeks, and died before three months had elapsed, from cancerous deposits in all the important organs; and this, though a special instance of the malignancy of these growths, by no means stands alone in my experience. Such facts afford a strong argument against the practice of tapping such tumours.

As I said before (p. 102), the horizontal (or Gartner's) tubes may occasionally be traced down through the substance of the uterus and in the walls of the vagina close to the opening of the urethra; but as a rule it is, like the vertical tubules, broken up in pieces, each piece being closed at both ends, and without doubt these disjointed sections form the basis of large cystic formations, just as is the case with the vertical tubules. They are all fœtal relics, and this fact may explain the malignant tendency towards rapid immature growths to which I have already alluded.

That there are cysts developed in the broad ligament which do not arise from these fœtal survivals is almost certain, but from

what source they arise I do not know. There is one kind, not uncommon, which develops a large quantity of unstriped muscular fibre in its walls, so that occasionally it looks almost like a recently pregnant uterus greatly distended. The largest tumour I ever removed in my life (estimated to weigh at least 110 lbs.) was a cyst in the broad ligament, the walls of which were more than an inch thick when it had contracted after removal. These walls were composed as exclusively of unstriped muscular fibre as is the pregnant uterus. The patient had lain on her side for many months before the operation; had, therefore, large bedsores, and was altogether in a deplorable state. She (case 4 in the list) survived the operation only a few hours.

I have removed four large solid myomata from the broad ligament by enucleation. In microscopic structure they could not in any way be differentiated from soft cedematous uterine myoma. Cystic tumours of the broad ligament are easily recognized by the fact that they are almost uniformly unilocular—in fact, they are uniformly so, for any apparent exception can easily be shown to be due to the growth of two or more cysts perfectly separable; in this particular differing widely from cystic tumours of the ovary, which are hardly ever perfectly unilocular. I have known only one unilocular tumour of the ovary, and it was of very small size. Broad-ligament cysts are, therefore, uniform in their outlines. The walls are usually very thin—sometimes extremely thin, resembling wet tissue paper more than anything else. Sometimes they grow very rapidly, at other times very slowly. When removed they can always be recognized by an anatomical peculiarity: their peritoneal investment is *perfectly* distinct from the cyst wall, and can be stripped off from the cyst with the greatest ease. In their growths they separate the folds of the broad ligament, pushing them up before them; and this process very often results in an embedding of the cyst in the pelvis, all the pelvic peritoneum being lifted out of the cavity by the growth of the tumour. I have given to these cases the name of “embedded cysts,” and in my early practice they were a source of great trouble to me. Alarmed at the condition, I only partly removed the cyst, as far as I could, then I stitched the edges of its cut walls to the edges of the abdominal wound, and put in a drainage tube, hoping in this way to cure the tumour. But I never did, and in several of the cases recorded in the list it is the second operation which is given, at which I opened the abdomen and completed the case, as I ought to have done at first. As a matter of fact, the enucleation of these cysts can always be accomplished under two conditions. The operator must be skilful with his fingers, and determined never to leave any operation unfinished; and when he selects his point for opening the peritoneum he must work steadily onwards from that point, and

not let his fingers dance about from one point to another. If he does he will lose his bearings and make a mess of the case.

There are some operators who still advocate tapping this kind of tumour, in the hope that a cure will be effected in this way. I doubt very much if such a thing ever happened. Certain it is that when tapped they may remain dormant for some years. Many of the cases in my list are illustrations of this. In one which I had tapped myself the patient was troubled no more for eight years, but then the cyst refilled after that long interval. I removed it, and found the scar of my old tapping-wound.

The contents of these cysts are generally limpid, but I have seen thick, gluey, and gelatinous contents of all shades of colour and consistency. I have seen many in which the cyst contents were hæmorrhagic, and the smooth ovoid broad-ligament cyst seems to have a special tendency to rotate and become strangulated.

At the meeting of the Medical Society of Strasburg, November 15, 1875, M. Kœberlé read a paper on the diagnosis between ovarian cysts of the broad ligament and cysts of the Fallopian tube, based on the chemical examination of the fluid contained in them. He found that the fluid of ovarian cysts contains some albumen, but a much larger proportion of the variety of albumen called paralbumen, the precipitate of which by nitric acid is soluble in acetic acid. The fluid found in cysts of the Fallopian tube, on the contrary, he says, contains albumen, but no paralbumen, so that the precipitate formed by nitric acid is rather increased by acetic acid. The fluid of cysts of the broad ligament is generally very limpid, containing salines, but very little albumen. Sometimes, however, it contains a distinct quantity of albumen, and the precipitate formed by nitric acid may be soluble in an excess of that acid. The researches of Schützenberger with the tannin process for estimating the quantity and kind of albumen have, however, thrown great doubt on these conclusions, and by the same means I have quite satisfied myself that M. Kœberlé's conclusions are not to be accepted. At my request, my friend Dr. McMunn, of Wolverhampton, undertook to investigate the possibility of determining the source of fluids by means of the spectroscope. I furnished him with a number of specimens of fluid the sources of which were absolutely known, but the results of his researches were entirely negative. They are given in detail in his valuable work on "The Spectroscope in Medicine" (London, 1880).

When the contents are limpid and of low specific gravity tapping probably does little harm to the constitution, for the system is robbed of little more than water. Such instances probably yield the instances in which tapping has been performed an enormous number of times over a long series of years. Two such cases I found recorded on tombstones in the churchyards

of Romsey, in Hampshire, and Bunhill Fields ; and I leave the epitaphs to tell their own story, doubtless in these instances quite veracious.

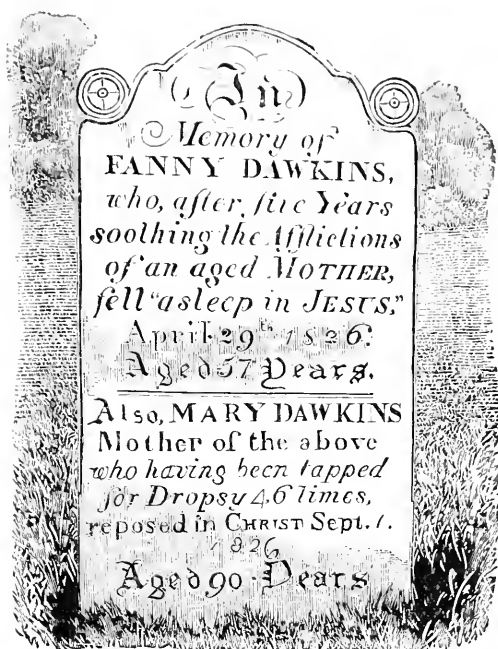


FIG. 24.—Tombstone in Romsey Churchyard.

In Bunhill Fields is the monument of a courageous lady, whose memory is thus perpetuated. On one side of the tomb we read—

HERE LYES DAME MARY PAGE,
RELICT OF SIR GREGORY PAGE, BART.
SHE DEPARTED THIS LIFE MARCH 11, 1728.
IN THE 56TH YEAR OF HER AGE.

And her fame rests on the inscription on the opposite side—

IN 67 MONTHS SHE WAS TAP'D 66 TIMES,
HAD TAKEN AWAY 240 GALLONS OF WATER
WITHOUT EVER REPINING AT HER CASE
OR EVER FEARING THE OPERATION.

The constant character of the relations of the peritoneal investment of these tumours with the true cyst is aided, for their identification, by another and almost as constant relation of the Fallopian tube and ovary. Some twenty years ago I had occasion

to make a medico-legal examination of the body of a woman far advanced in life, and I found in her left broad ligament a cyst as large as an orange, filled with clear, limpid serum. It was pressing upward and backward out of the pelvis, the ovary being at its lower and anterior aspect, and the Fallopian tube arched over its anterior surface. On the side next the uterus two smaller cysts were lying close to it, and nearer still a very minute sac, which was evidently, from its mere shape, a distended parovarian tubule. The ovary was white, puckered, and shrivelled, and had not a continuous relation to any of the cysts, though it touched the largest at its hilum. The Fallopian tube was normal, and had no other relation to the tumours than slight connection by loose areolar tissue. There was in my mind no doubt that this was a pathological indication of value, for in an ovariectomy that I had performed not long before I was struck by the fact that the ovary was perfectly healthy and separated from the tumour, as was also the tube, by a mesovarium of some extent; in fact, I did not do ovariectomy at all in the removal of the tumor, for, in passing the chain of the *écraseur* round its base, I did not include either the tube or the ovary, and they were both returned into the abdominal cavity. In the records of ovariectomies performed these cases have, up till now, always been stated as ovariectomies, and the ovary and tube associated with the tumour have been removed with it. Both the record and the removal of the ovary are mistaken. The operation is not an ovariectomy at all, and nine times out of ten both ovary and tube might easily be separated from the tube and left, and this practice I now always try to follow. It is very curious that all the early cases, with one exception, of so-called ovariectomies—I mean those between 1827 and 1842—are instances of removal of parovarian cysts; and it is still more curious that those who are crying out most loudly against the unnecessary removal of ovaries have been in the habit of pursuing this practice in the case of parovarian tumours without compunction. I have therefore placed my cases of broad-ligament cyst in a special list, at least so far as it is possible to do so. In the early part of my practice I did not discriminate these cases as carefully as I do now, and therefore some of the cases may have escaped separation.

The result of all my observations has been that in every truly unilocular tumour, with one exception, I have found the ovary unaffected, though on several occasions I have seen it stretched over the cyst-wall. I have three or four times observed the ovary separated from the cyst by a more or less distinct mesovarium, and on one occasion I found in that fold some unaffected parovarian tubules, in the case of a lady, a patient of Mr. Hallwright, from whom I removed a large unilocular cyst about thirteen years ago. In another instance the healthy ovary was left at least an inch

below the clamp; and in a third the ovary and tube were found glued on to the cyst, but forming no part of it. In this cyst the walls were extremely thick, and contained, as in other examples of the same kind of tumour, large quantities of involuntary muscular fibre—a fact which I do not think militates against my view that it was of parovarian origin; for nucleated muscular fibre cells exist in the broad ligament to some considerable extent, and myomatous tumours are found occasionally within its folds.

The case to which I have previously alluded as presenting a tumor with many cysts, but which ought to be placed under the same category as the unilocular cysts, occurred in the person of a lady aged sixty-six. She was a widow, having been married forty-three years before the tumour appeared. The menses had ceased for nearly twenty years, and her youngest child was twenty-five years of age. There was every reason to believe, therefore, that the condition of the cell-growth of her ovaries would be one of very low activity. The tumour was first discovered about five years before I saw her, and had grown slowly for four years and a half, but with extreme rapidity for six months. The abdominal parietes were very thin, and the percussion-wave was communicated with extreme and uniform rapidity in every direction. I diagnosed, from my former experience, that it was a unilocular Wolfian cyst, and that the ovary would, in all probability, be found uninvolved. I was right about the ovary, for that was found, along with the tube, almost undisturbed, and not in any way involved in the tumour, the latter having apparently escaped from between them backward and upward. I had made a mistake, however, about the tumour being unilocular, for it was composed of five or six sacs. The walls of these were very peculiar in being of uniform thickness, or rather thinness, for they were like tissue-paper, and had no thickening toward the base of the tumour, as is always the case in the multicystic adenoid or multifollicular tumour of the ovary. My belief is that this tumour was a specimen of dropsy of a number of the parovarian tubules; for, if one alone may become dropsical, there can be no reason why a number should not be so coincidently. My opinion was confirmed, however, by a re-examination of the tumour for the special investigation of one point drawn attention to by Dr. Bantock; that is, the possibility of separating the outer or peritoneal coat of the cyst. This could readily be done toward its base for a short distance up from the ovary, discovering the fact that the gland and its duct could be stripped off the tumour without damaging its wall. The rapid growth during the later periods of its existence, however, seemed to have so stretched the walls that, beyond two or three inches from its base, the peritoneal layer could not be separated from the cyst-wall proper. I quite satisfied myself that this case was really one of multilocular parovarian tumour, and I was confirmed

in this view when I found that Dr. Bantock refers to a case of Mr. Spencer Wells's, which was recognised as one of bilocular parovarian cyst.

The peculiar relation of the Fallopian tube to these tumours, of which I have already spoken, exists in many of them to a very exaggerated degree. In one case I saw the tube enormously increased in size, nearly nine inches long and correspondingly thickened, so that a No. 12 catheter passed along it quite easily to within one inch of the point of division, when it suddenly contracted to its normal dimensions. It was bound over the tumour by the peritoneal investment of the cyst, just as the ureter is bound on the posterior abdominal wall; and it came away with the peritoneum when that membrane was lifted off the cyst, just as the ureter similarly rises with the serous membrane.

The diagnosis of parovarian cysts is generally very easy to the practised hand, for they give a uniform and very rapid wave of fluctuation in every diameter of the tumour. Their shape is usually globular, and they do not project into the pelvis, as is very often the case with the minor cysts of an ovarian tumour. They very rarely give rise to symptoms of any kind, and still more rarely to any symptoms of urgency. They sometimes grow very rapidly. I removed a very large parovarian cyst some years ago from a patient under the care of Dr. Campbell, of Stourbridge, where the fact was fully ascertained that the tumour grew in less than six weeks. It may happen, however, that all the conditions of a parovarian cyst may be very closely imitated by an ovarian tumour, and they are absolutely mimicked by two rare forms of cyst to be afterwards described, one of which is a development of the occluded tube of the urachus, or a remnant of the allantoic cavity, and the other I believe to be developed from a wandering ovum.

A further point of great importance in recognizing mere ascites from an ovarian or parovarian tumour is that in the former condition there is generally an appearance in the patient's face of suffering from serious functional disturbance, whereas in the latter the patient often looks in perfect health. Sometimes we find the walls of a parovarian tumour very thin and flaccid, in this way closely resembling the appearance of ascites.

This class of tumours it is which has given rise to a great many different beliefs in connection with the history and treatment of ovarian tumours which Dr. Mathews Duncan has very properly designated delusions. Among these was the belief, originated by M. Boinet, that ovarian tumours had been cured by tapping, by injection with iodine, by what Mr. Baker Brown called a formation of a false oviduct by the insertion of setons, and by a variety of other more or less barbarous and unscientific proceedings.

The walls of these cysts are nearly always very thin, consisting of little more than a thin basement membrane and a lining of columnar epithelium. This epithelium undoubtedly undergoes alterations such as I have described as occurring in ovarian cysts, for I have seen all the appearances on the lining of a parovarian cyst that I have seen in an ovarian tumour. They undergo malignant degeneration, they suppurate and become gangrenous, just as ovarian tumours do. Sometimes the basement membrane of their walls, which always contain some muscular fibre, becomes enormously thickened, and I have removed a parovarian cyst with walls more than half an inch thick, the greater part of which was composed of fusiform muscular cells.

They are, therefore, not matters to trifle with. Their early removal is always simple and safe. They should never be tampered with by tapping, but ought to be removed by abdominal section in their early stages, just as should ovarian tumours. Sometimes they burst and seem to disappear spontaneously, and this again has given rise to the statement that this result is obtained occasionally for ovarian tumours. When this fortunate accident takes place early in their history it will probably do no harm, but if it occurs during the advanced stages it is just as likely to result in cancerous implantation of the peritoneum as if the cyst had been ovarian. Some years ago I removed a large parovarian cyst which had several times been tapped, and which had ruptured into the abdominal cavity. On removing it I found the peritoneal surface studded with papilloma, of which the patient speedily died.

The development of an ovum in the broad ligament, resulting from the rupture of a tubal pregnancy into the cavity of the broad ligament, constitutes a most interesting phase of the progress of certain cases of ectopic gestation, and will be discussed in a chapter devoted to that strange phenomenon of pelvic pathology.

Closely allied to the above is the occurrence of an effusion of blood into the cavity of the broad ligament, and therefore most of what I have to say on this interesting subject will be found there also; but I must anticipate some of my remarks there in order to speak of abscess of the broad ligament.

It is here that we come to the ground on which we find the greatest features of importance for the broad ligament, alike pathological and clinical, for what is called pelvic hæmatocele has an importance of the greatest possible kind if it is intra-peritoneal—that is to say, if it is not in the cavity of the broad ligament; whilst, on the other hand, if it is in the cavity of the broad ligament, and therefore not intra-peritoneal, its significance is relatively very little.

The folds of the broad ligament have enclosed between them a number of bloodvessels and nerves to which I have as yet made no allusion, and of which it is wholly unnecessary that I should

give a detailed anatomical description. Any injury to or rupture of these vessels will cause an effusion of blood, and if the broad ligament be uninjured that effusion will be limited to its cavity, and be extra-peritoneal. If the broad ligament be injured, then the effusion may, and probably will, extend indefinitely into the peritoneum and kill the patient. Some writers propose to term the former condition a "pelvic hæmatoma," and the latter a "pelvic hæmatocele." For reasons afterwards discussed I prefer to retain the old term "hæmatocele," mistaken in origin though it be. Like many other still more mistaken terms, it has been sanctioned by long use, and new terms, unless giving a more clearly defined meaning or a better representation of the facts, are only provocative of confusion. The term hæmatoma has neither of these recommendations, and therefore I do not accept it. Broad-ligament hæmatocele, according to my experience, arises from three causes, and always by the same means. The direct agency is rupture of a bloodvessel, and I think that is almost always a vein. The first and probably the most common cause is the sudden arrest of menstruation by a chill, mental emotion, &c., by which an undue pressure is put upon the thin-walled veins contained between the folds of the broad ligament, a rupture takes place, and blood is poured forth into the cavity.

Similarly, after operations when the broad ligament is tied as the pedicle of a tumour, there is very often set up a pseudo-menstruation, which has not its usual vent. In front of the ligature (that is, taking the road from the heart) the blocked vessels are engorged. A small capillary or capillaries give way, and an effusion of blood takes place into the cavity of the broad ligament, which is closed by the ligature. If the cavity is not so closed—that is, if the ligature slips—the hæmorrhage will be not only from a very large artery, but it will be into the cavity of the peritoneum, and it will, if left unchecked, mean the death of the patient. But if the ligature is properly tied, and the cavity of the broad ligament remains closed, the hæmorrhage will be limited, and will give rise to very little trouble. Such hæmatoceles are quite common after all operations involving the broad ligament, and experienced surgeons are quite familiar with them. Of course, writers of library papers and irresponsible (and inexperienced) writers of anonymous reviews in the medical journals cannot be expected to know anything about such occurrences, and their ignorance has to be pardoned. I have strong reason to believe that such hæmatoceles occur in about eight per cent. of all operations, and very rarely give rise to serious trouble. In another chapter I give an account of one case where I had to reopen the abdomen to save the life of the patient, the hæmorrhage, entirely into the broad ligament, being so extensive. In some three or four others subsequent suppuration has necessitated drainage of the cavity, but all the others have

recovered with a transient rise of the pulse and temperature, usually lasting four or five days. These effusions generally occur on the fourth or fifth day after the operation, and are indicated by pelvic pain and discomfort *without any abdominal distension*. The pulse and temperature also rise, and if a vaginal examination is made the floor of the pelvis on one side, sometimes on both, will be found fixed. If the effusion is on the left side it will be found encircling the rectum like a ring, and this is the pathognomonic sign of the accident, as I first pointed out nearly fifteen years ago. Mr. Pridgin Teale has favoured me with a remarkable observation on this point in male patients, which so completely substantiates my views that I reproduce his own words as he has been kind enough to convey them:—

“38, Cookridge Street, Leeds,

“December 24th, 1888.

“Dear Tait,—Enclosed I send you a short statement of my two instances of perirectal hæmatocele in the male. You will no doubt be able to condense them into a short statement for your book.

Yours truly, T. PRIDGIN TEALE.”

“*Notes of Two Cases of ‘Perirectal Hæmatocele, simulating Cancer of Rectum.’*”

“Both instances occurred as a result of attempts to relieve retention of urine in the male. In the first case I was myself deceived, as well as a neighbouring hospital surgeon and a London consultant. The second case, which occurred many years afterwards, I recognised, and then for the first time understood the first.

“Case 1, the subject of retention of urine from prostatic difficulty, had been relieved several times by catheter; at last his medical attendant failed to reach the bladder, and I was called in. I failed also, and eventually tapped the bladder above the pubes. During my examination of the rectum I was conscious of an irregular bulging of the rectal wall. About a week afterwards, on examining the rectum with the finger, in consequence of an irritable condition of bowel almost amounting to dysentery, I discovered a hard ring of constriction, which I pronounced to be scirrhus stricture of the rectum. This view was corroborated by the other hospital surgeon associated with me, and also a few days later by a leading London surgeon, who was also called in to the case. Much to our amazement, the patient recovered, and lost all trace of trouble in the bowel. We, the doctors, won no small discredit for our opinion. The second instance occurred some ten years later, and about six years ago. I was called to a case of retention of urine, in which there were extensive false passages between the bladder and rectum. I succeeded in passing a large catheter, and afterwards the medical attendant drew the urine without further difficulty. As there was intense discomfort and irritability of the

bladder, at the end of three days I examined the prostate by the rectum and felt a swelling, which I punctured from the rectum, letting out offensive pus. In making the incision I was conscious that the opening in the mucous membrane was too small, for on searching for the opening I was not able to enter it with the knife. On examining the rectum the following day I discovered a similar condition to that found in No. 1. The tube of the rectum was closed by a firm ring, which I at once recognised as a surrounding hæmatocele. In the course of a few days this simulated stricture began to soften and to disappear. I have no doubt that the abscess was the result of broken-down blood-clot, and the hæmatocele the result of my puncture, which did not permit adequate escape to the submucous hæmorrhage. Both cases recovered.—T. PRIDGIN TEALE."

This contribution is the first confirmation I have seen of my observation of the ring stricture of the rectum as a sign of broad-ligament hæmatocele. The only harm done by such occurrences is a delay in the convalescence. I have never seen any serious or permanent ill result.

The third cause of broad-ligament hæmatocele known to me is the rupture into the ligament cavity of a tubal pregnancy (see Ectopic Gestation). Occasionally, as I have said, these hæmatocèles suppurate and form "pelvic abscess"—a term which I use strictly to define suppuration in the cavity of the broad ligament. Here, again, the pathological importance of this set of peritoneal folds is most evident. Suppuration on one side of the ligament has little damage to life, whilst on the other it is of the gravest possible consequence. In either case the abdomen should be opened without delay. For peritonitis I shall discuss this method of treatment by-and-by. Of suppuration in the broad ligament treated in this way I have had a large experience of a uniformly favourable kind, so that it is rapidly rising in professional favour.

My first contribution on this subject was made in a paper published in the seventy-third volume of the Transactions of the Royal Medical and Chirurgical Society of London, and contained a series of cases, six in number, in all of which suppuration had occurred, as far as I could ascertain, in hæmatocèles of the broad ligament. Up to the occurrence of the first case I had confined my treatment of pelvic suppuration to openings made from the vagina or in the neighbourhood of Poupart's ligament. Experience, however, had driven me to the conclusion of Dr. Emmet, that "I cannot regard the introduction of the trocar into the enflamed tissues of the pelvis as a procedure free from danger under all circumstances." It is perfectly true that in very many cases where an abscess undoubtedly exists in the cellular tissue of the female pelvis, the fluid can be reached and removed by the needle of the aspirator. But, according to my experience, the relief obtained in this way is, in a large number of cases, neither complete nor

permanent, and, in nearly all, the convalescence has occupied a time not at all commensurate with the extent of the lesion. This is quite as true of abscesses which have been allowed to open themselves, or have been assisted to open, in the groin. They often continue as fistulous openings for years.

In many cases, even when the abscesses can be reached by vaginal puncture, the nature of their contents is such as to make their evacuation an impossibility; and I have seen several where punctures made at random through an indurated pelvic roof have missed the disease. In these cases the symptoms of the presence of pus were conclusive, but no indication of its seat could be obtained. Dr. Emmet speaks of such in these words: "I can recall a number of cases which have been under my observation, with thickened tissues, where no treatment had the slightest effect, and, finally, they have passed into other hands."

The course of such abscesses is so thoroughly described by Dr. West that his words cannot be improved upon, and therefore I give them at length:—

"When suppuration takes place the matter makes its way outwardly through the vagina, or through the intestinal canal, in almost all cases in which the inflammation is limited to the parts contained within the broad ligament. In those cases, however, in which the pelvic cellular tissue is implicated, the matter not unfrequently makes its way round between the muscles and the external surface of the peritoneum, and the abscess points and discharges itself through the abdominal walls somewhere in the course of Poupart's ligament, or a little below that situation.

"Though the size of the abscess is not in general very great, it not unfrequently passes into a chronic state, and emptying itself, for the most part, through some narrow passage of communication into the bowel, the patient continues for months or years liable to occasional discharges of pus per anum, the commencement of which dates back to some attack of inflammation of the cellular tissue years before."

In an instance quoted by Dr. West, "occasional discharges of matter took place from the bowel, and pus was often intermixed with the fæces, five years after the first symptoms of inflammation of the cellular tissue about the uterus, the chronic results of which were still evident in a tumour which was closely connected with the rectum and the womb. These chronic abscesses generally contract, and the fistulous passages that lead to them become, by degrees, obliterated, but exceptions to this now and then occur, two of which have come under my own notice; and Sir J. Simpson has reported some very interesting cases where permanent fistulous communications have formed between the abscess succeeding to inflammation of the pelvic cellular tissue and the bladder, uterus, or intestinal canal."

In my own practice such disappointing cases formerly occurred with but too great frequency, and though I have had some successes by the employment of such means as the elastic ligature (*Lancet*, June 27, 1874) and counter-opening in the vagina (*Lancet*, April 3, 1875), yet the progress toward recovery has been so protracted as to contrast favourably only with those cases in which there was no recovery at all.

I had been, therefore, continually on the outlook for some means of dealing with such cases which would bring them as satisfactorily within our means of treatment as are collections of matter in most other parts of the body. This has been furnished by the wide, free, and successful application of abdominal section for the treatment of pelvic and abdominal tumours, and I am now able to give a list of thirty-eight cases, which includes the whole of my experience in this novel proceeding, and in which success has been obtained far surpassing anything I have yet seen or heard of. In this comparison I am of course excluding those cases where pointing of the abscess in the vagina is evident at an early stage of the case, but even in these the recovery has always been, in my experience, more protracted than in the six now to be narrated. In addition to this list there are about twenty others in which I have operated from above, but without opening the peritoneal cavity. These, of course, under the definition of abdominal section I have adopted, are not to be included in the present list; but in every one recovery and cure has been obtained. Fifty-eight consecutive recoveries, prompt and permanent, in such a grave condition constitute a result of a most satisfactory kind.

A patient was sent to me in February, 1879, by Mr. Gwinnett Sharp, of Walsall, suffering from a pelvic tumour, associated with very severe symptoms. She was twenty-two years of age, and had been married nine months. Her menstruation had always been too frequent and too profuse, and six weeks before I saw her it had stopped suddenly during its course, and this was associated with the onset of violent pelvic pain—one of the leading features of extra-peritoneal hæmatocele. A few days afterwards she shivered and became very ill and feverish, and these symptoms had become intensified when I saw her ten days after their occurrence. She was then emaciated and hectic-looking, with a high night temperature, intense pain and tenderness over the lower abdomen, and when examined, a large fluctuating tumour, adherent to and behind the uterus, and going on either side of it, was found to occupy the pelvis and rise about half-way up to the umbilicus. The roof of the pelvis was fixed and hard, and no fluctuation could be felt there.

The nature of the tumour could be open to only two suggestions: that it was a suppurating parovarian cyst with peritonitis, or a suppurating hæmatocele. I leant to the latter

view, as it was in consonance with the history, and I have rarely known a parovarian cyst suppurate, whilst hæmatoceles frequently do.

In any case, I determined to open it from above, and this I did. I found a large cavity, containing about two pints of fetid pus, with decomposing blood-clots. This I carefully cleansed out, and after having united the edges of the opening into the cyst carefully to the abdominal wound, I fixed in one of Kœberlé's glass drainage-tubes, five inches long. Seven days after the operation I placed a three-inch glass drainage-tube, and in another week this was replaced by a soft rubber tube. The patient got up on the twentieth day after the operation, and in ten days more went home perfectly well, with the abscess healed, and she remains now in perfect health (March, 1880).

The second case was sent to me by Dr. Flynn, formerly of Birchills, now of Kingstown, Dublin. She was forty-five years of age, and had never been pregnant, save one doubtful miscarriage soon after marriage, nineteen years ago. Symptoms resembling those of hæmatocele had occurred eight months before I saw her, and since that time she had been losing flesh, had lost her appetite, was troubled by constant thirst and night-sweats, and she had a rising night temperature. The uterus was fixed in a mass of effusion occupying the left broad ligament, and partly the right one also, and the mass on the left side encircled the rectum, forming a pronounced stricture, as hæmatoceles of the left broad ligament frequently do. No point of fluctuation could be felt in the pelvis, but the symptoms pointed clearly to the presence of pus. I therefore determined to open the abdomen, and readily obtained the consent of my colleague to this proceeding.

After reaching the peritoneum a large abscess was opened just behind the base of the bladder, between which and the uterus it principally lay, but stretching round behind the rectum. The floor and posterior wall of the abscess were found to consist of organized blood-clot, so that its origin was in a blood effusion into the broad ligament. A glass drainage-tube was inserted, and this was changed for one of Chassaignac's wire tubes on the eleventh day after the operation. She sat up on the twenty-first day after the operation, and the tube was finally removed on the twenty-sixth. She went home on the thirtieth day perfectly well, and has remained so ever since, now nearly ten months.

The third case was a patient of Mr. Hallwright's, in whom he had diagnosed hæmatocele some four weeks before I saw her. Symptoms of suppuration set in, and I performed exactly the same operation as before; that is, the peritoneum was opened, and the abscess emptied and cleansed, and then the edges of its opening fastened to the edges of the parietal wound, and a glass drainage-tube fastened in. This case also was an undoubted

hæmatocele of the broad ligament, and, I think, had its origin in a tubal pregnancy rupturing into the cavity of the broad ligament. Eight days after the operation the glass tube was changed for a wire one, and this was removed in twelve days more. She left the hospital perfectly well only thirty-three days after her admission, and has since remained in good health.

Mary Ann B——, aged thirty, has been married eight years, and has had four children, youngest fifteen months old. Seen first by Mr. Hallwright on December 12th, when she stated that she had become unexpectedly unwell about five weeks ago, that this was accompanied by violent pain, which has never since been absent. She was seen by Mr. Hallwright, who diagnosed the occurrence of hæmatocele from the presence of a large hard tumour behind the uterus. About a fortnight previous to my seeing her the nocturnal exaltation of temperature, night-sweats, thirst, and increased pain led Mr. Hallwright to suspect that the effusion was suppurating, and when I saw her I had no difficulty in confirming his opinion. I therefore admitted her to hospital, and on December 22nd I performed abdominal section, as I found the intensity of the symptoms increasing, and on examination under ether the mass of the effusion seemed too high up to be opened safely from the vagina. The tumour consisted of a large effusion of blood in process of disintegration, contained in a cavity formed by the lifting up of the posterior layer of the broad ligament, the rectum being carried up in front of it, together with the large vessels of both sides, as high as the bifurcation of the aorta, whilst anteriorly the peritoneum dipped to a most unusual depth, so that had I tapped the tumour from the vagina I must have gone through the peritoneal cavity. The cyst was opened and emptied, and a drainage-tube fastened in, and the peritoneum closed in the usual way. Her recovery was neither so easy nor so rapid as any one of the others, probably because the cavity was the largest of all, and her condition before the operation was very bad, though another case to be related was, in the latter respect, much worse. The temperature in the present case was 38.4° before the operation, and it rose to 40° on the second day. It did not fall to 37° till the tenth day, December 31st. The drainage-tube was removed on January 10th, and on the 17th the wound had perfectly healed, and she left the hospital on the 26th. I saw her on February 26th, when she was hardly to be recognized, so astonishing was her restoration to health. From a thin, emaciated, and apparently dying woman she had been transformed into a perfect picture of health, and she stated that she was able to do her work and get about as well as ever she did in her life.

In this case I am quite satisfied that the delay of the operation for a few days would have been fatal, and no vaginal tapping,

even if it had missed the peritoneal layers, would have emptied the cyst of its clotted contents.

Ann S——, aged twenty-eight, placed under my care in January, 1882, by Dr Gordon, of Walsall. She is the mother of three children, the youngest being three years of age. About four months ago she had symptoms resembling those of sudden effusion of blood into the broad ligament. For a month she was able to get about, but during the last three months she has been entirely confined to bed, the subject of symptoms clearly pointing to the occurrence of suppuration. Dr. Gordon had discovered the presence of a pelvic mass behind the uterus, in which no fluctuation could be discovered, and which was fixed.

I admitted her into hospital, and, suspecting the case to be one of suppurating hæmatocele, I opened the abdomen on January 5th, and found the case to resemble the preceding one, save that the disintegrating effusion was not so large. It was dealt with in the same way, and the patient made a much more easy and rapid recovery, leaving the hospital on January 17th, and being restored to perfect health before the end of February.

Mrs. H——, aged twenty-nine, was married at eighteen, had a child within the year, and has never been pregnant since. I saw her, at the request of Dr. Millington, of Wolverhampton, under whose care she had been, in conjunction with Dr. Blackford, of Cannock, whom I met in consultation over the case on the 15th of January, 1882. The history given to me was that about nine weeks previously, when driving in an open carriage with her husband on a very cold day, and during a menstrual period, she was suddenly attacked by a violent pelvic pain, and coincidently with this the discharge ceased. This pain had continued ever since, and had of late increased in severity. Menstruation had occurred at two irregular intervals since the beginning of her illness with great profuseness, and during these periods her pain had been much easier. A pelvic tumour had been discovered by Dr. Millington some weeks before my visit, and this he had regarded as an effusion of blood. She had suffered for about three weeks before I saw her from night-sweats, almost constant sickness, utter loss of appetite, intense thirst, with various other symptoms of pronounced hectic. The tumour, when I examined it, involved all the pelvic organs in a fixed mass of cartilaginous hardness, with the uterus embedded in it; the bladder spread over it in front, and the rectum encircled by a ring of hard effusion. The mass could be felt above the pelvis as a round and non-fluctuating tumour, with intestine in front of it. The patient had reached almost the final stage of exhaustion and emaciation. There was no difficulty in diagnosing the case as one of suppurating hæmatocele. With Dr. Blackford's concurrence, we had her removed to Birmingham, and on the 21st I opened the abdomen

and found matters quite as I had anticipated. The posterior layer of the broad ligament was lifted completely up out of the pelvis, and so was the anterior layer, as far as I could make out ; at least, the only structure I could identify was the base of the bladder, and that seemed to form the anterior boundary of the tumour. From this point it spread backward, on a level with the brim of the true pelvis, and its posterior boundary was the bifurcation of the aorta. The contents were clearly fluid, and therefore I tapped it with an aspirator needle, and evacuated about half a quart-bottleful of curdy blood-coloured pus. I then laid the cyst open from the point of puncture, in a direction from before backward, and found its floor to consist of a thick layer of laminated clot, hard and rigid. I could make out the uterus rising out of this mass, but I could not discover the rectum.

I stitched the edge of the opening into the abscess to the edges of the parietal wound, and then closed the rest of the peritoneal opening, and fastened in a wide drainage-tube of glass. After the operation the patient's temperature never rose above 37° , she had no more night-sweats nor sickness, and her appetite was really keen on the third day. A small-sized wire drainage-tube replaced the glass one on the twelfth day, as the discharge had become healthily purulent and free from clot débris. The smaller drainage-tube was removed on the fifteenth day after the operation, and on the twenty-fourth the sinus was quite healed, she had gained greatly in flesh and colour, she was able to walk about, and on the twenty-seventh day she went home perfectly well, the uterus, however, being still quite fixed, as I expect it will remain for years. I have repeatedly seen this patient since the time of the operation, and her health remains perfect to this day.

These are the cases which I first published on this subject, and I have little need to give further details save in proof of the belief that I have that the last case and the third are examples of the suppuration of hæmatoceles due to the passage of a tubal pregnancy into the broad ligament. In the last case upon which I operated positive proof of this was obtained by the discovery of placental débris, and with the narrative of its details I shall close the subject.

E. C., married, aged 40, was sent to me by Dr. Hindle, of Leicester, who sent me a history to the effect that she had been under his care for fourteen days. The first symptoms were pain in the back and slight bearing-down pains ; these were followed by retention of urine and severe pain. On examination per vaginam he found a hard growth distinctly felt extending unilaterally, which could be felt through the abdominal walls. She had been ailing slightly for about three months, and found that she had been getting a little bigger since August. She had been married twenty years, and had no children ; she had menstruated perfectly regularly till the first week in December, since which time she had seen no

discharge. On examination I found a large mass, with doubtful fluctuation, rising towards the right kidney, and reaching across on a somewhat lower level to the base of the left kidney. It blocked up the pelvis completely, the uterus being dragged up in front of it, but the cervix could not be reached by the finger; throughout the mass gave a sense of fluctuation, but not distinctly so.

I diagnosed that it was an effusion of blood, probably suppurating, in the broad ligament. I opened the abdomen on January 23rd, assisted by Dr. Holford Walker, and before I could reach the abdomen I opened the bladder by mistake, the base of that viscus being raised almost to the level of the umbilicus. When the peritoneum was opened I came immediately upon the fundus of the uterus, and from behind this the tumour reached up as already described. Whilst endeavouring to ascertain its exact relations, and down between the rectum and uterus, my fingers suddenly passed in a cavity, out of which rushed a large quantity of purulent debris, occupied by masses of flocculent material. From this point I washed out the cavity thoroughly, but finding that it was impossible to drain outwards from this point I made an incision into the cyst wall—that is, the broad ligament—raised up from the peritoneal surface of the uterus, immediately behind the fundus, and from there I was enabled to remove a still larger quantity of purulent debris, one mass being of considerable size. I stitched this opening to the wound in the abdominal wall, and left in a large-sized drainage tube. The patient made an uninterrupted recovery. I changed the drainage-tube for a smaller size on the 25th, and removed it completely on the 26th, all discharge having ceased, and the wound perfectly healed. The lower part reopened, and a urinary fistula was established; this slowly healed, and the patient went home convalescent on February 16th, the lower part of the wound being still slightly open.

Examination of some of the pieces of debris conclusively showed that it was broken-up placenta, and therefore there can be no doubt that this was an instance of ectopic pregnancy arising in the broad ligament, probably the right one, forming a large extra-peritoneal hæmatocoele, and ending in suppuration. I think it quite likely that the case might have been dealt with satisfactorily by an incision through the vagina, but I do not think that in that way the mass of debris could have been got quit of as effectually as it was by supra-pubic operation.

In all of these cases I am satisfied that mere vaginal tapping would have been useless. In most of the cases, if the abscess had been opened by natural processes, it would have been into the rectum. In the last case it would probably have been in one of the groins; but I think in every one of the cases, unless it be in the second, death would have occurred long before a natural outlet could have been established.

My general conclusion from these cases is that the opening of such abscesses by abdominal section is neither a difficult nor a dangerous operation; that recovery is made in this way more certain and rapid than in any other; and that in future I shall always advise an exploratory incision where I am satisfied there is an abscess which cannot be reached nor emptied satisfactorily from below.

Amongst the cases of parovarian cyst which I have dealt with I have met with one which is of a most exceptional character, because it contained dermoid elements, which I have never before seen outside an immediate association with the ovary; but in this case the cyst was embedded. I stripped it out of its peritoneal investment, and left the ovary intact. The operation was performed on December 15th last year on a patient aged 50, sent to me by Dr. Thompson, of Nottingham, and the removal of the tumour was an extremely difficult piece of work. The patient made a perfect recovery, and left my care on January 12th. For the following description of the tumour I am indebted to my assistant, Mr. Teichelmann.

"The cyst has been enucleated. It contained a large quantity (about twelve pints) of curdy fluid, and a mass of hair the size of two small fists matted together by a greasy sebaceous material of the consistence of butter. The hair was of a light-reddish colour, and was composed of filaments varying from one to three inches in length. The cyst wall was fibrous in structure and varied from $\frac{1}{30}$ to $\frac{1}{2}$ an inch in thickness. Its inner walls were lightly roughened and velvety in the greater part of its extent, showing under the microscope a thin layer of fatty degenerated granulation tissue on a fibrous ground. It showed here and there some light yellowish-brown patches, slightly elevated, and rough to the touch. These, which at first sight appeared to be the horny layer of the epidermis, proved, on further examination by the microscope, to be structureless cheesy material slightly impregnated with lime. The thickest part of the wall was composed of two mamillæ close together, each about the size of a large nut. They projected into the cyst, and from the summit of each grew several tufts of hair. On the surface they presented the appearance of ordinary scalp skin; on cutting into these they were found to be composed of a soft fat covered by skin similar to that on the scalp. On examining sections of these, their structure proved to be identical with that of the scalp, with the following differences:—The epidermis was thinner, the horny layer being only slightly represented, the sebaceous glands were large, multilocular, and altogether more highly developed. The sub-epidermal tissue was less fibrous, the papillæ few, and not well marked. The thickness of the fatty layer was about three-eighths of an inch in its thickest part, and only slightly fibrous. The fat was homogeneously distributed, and not

arranged in loculi, as is usually the case in the scalp. The fibrous wall of the sac was indifferently supplied with bloodvessels."

Amongst the exceptional diseases of the broad ligament which I have met is a remarkable case of hydatid disease of the cavity in the case of a young married woman, aged 30, placed under my care by Dr. Annie Clark. The operation was performed on March 19th, 1887. The diagnosis was made of a tumour fixed in the pelvis, and probably of the broad ligament, and when that capsule was opened several pints of the common echinococcus hydatid were removed. There can be no doubt at all as to the relations of the hydatid deposit; it was exclusively confined to the left broad ligament, pressing the uterus well over to the right, and occupying the whole of the pelvic cavity and a good deal of the abdomen. The opening into the cavity was secured by stitches to the abdominal wound, and a glass drainage-tube inserted. For some days hydatids continued to be discharged. The drainage-tube was removed on the tenth day after the operation, and on April 4th the patient went home perfectly recovered. She has remained since in perfect health.

As I have already said, I have removed three myomata, varying in size, from the broad ligament—tumours which had no kind of attachment to the uterus at all. One was at least eleven pounds in weight, and the others between two and three. They were all œdematous in precisely the same way as cysts, and in microscopical character presented no difference whatever from the ordinary soft œdematous myoma of the uterus. The last case occurred in a lady aged fifty-five, who was brought to me by Mr. Hodgson Wright, of Halifax. She had ceased to menstruate for seven years, and noticed a lump for the first time three years ago in the right side this had speedily increased, and was removed at the operation on the 16th of July of last year, as I said, by enucleation, the stump of the capsule being closed by a serrenœud as in hysterectomy. The following description of the tumour on subsequent examination was given to me by my assistant, Mr. Teichelmann:—"The tumour, which weighed just over 2lbs., was attached by a broad œdematous pedicle to the broad ligament, close to, but distinctly separate from the left margin of the uterus. On section, a considerable amount of fluid drained away. The œdema spaces were smaller and more numerous, and there was less tendency to the formation of distinct cysts than in the uterine œdematous myomata. The microscopic appearances of a section are exactly similar to that from which the drawing (Fig. 23) was made, showing strands of involuntary muscular fibres separated by serous fluid and degenerated fibrous and muscular tissue."

This case emphasizes somewhat my belief that not only is œdematous myoma a special disease differing from the multinodular myoma, but that it exists independently of the menstrual function.

No.	Residence.	Medical Attendant.	Age.	M. or S	Date.	
1	Wakefield	Mr. W. R. Milner...	45	M	1869. Dec. 5	R
2	Birmingham	Mr. Hallwright	32	M	1872. May 8	R
3	Wellington	Dr. Marsden	66	W	June 22	R
4	Solihull	Mr. Lowe	28	S	Dec. 9	D
5	Bromyard	Dr. Etheridge	42	M	1878. Jan. 19	R
6	Birmingham	L. T.	22	M	May 25	R
7	Preston	Dr. Moore	23	S	Aug. 7	R
8	Birmingham	Dr. Evans ..	49	M	" 7	R
9	Stonehouse	Dr. Eshelby.....	20	S	Sept. 2	R
10	Birmingham	L. T.	27	M	" 6	R
11	Tamworth	Dr. Fausset	46	M	1879. Mar. 28	R
12	Wellington	Dr. Macarthy	30	M	June 25	R
13	Glasgow	Dr. McLachlan	28	M	July 8	R
14	Dudley	Mr. Messiter	30	S	" 31	R
15	Dudley	Dr. Higgs	18	S	Aug. 9	R
16	Dudley	Dr. Higgs	39	M	" 15	R
17	Birmingham	L. T.	37	M	" 18	R
18	Moxley	Dr. Blackwood	40	M	" 22	R
19	Dudley	Mr. Steele	36	M	Nov. 25	R
20	Atherstone	Dr. Handford	17	S	Dec. 1	R
21	Birmingham	Mr. Yates	27	M	" 10	R
22	Kidderminster ...	Dr. Spofforth	15	S	1880. Jan. 14	R
23	Birmingham	Dr. Badger	48	M	" 27	R
24	Birmingham	Mr. Fairley	15	S	April 1	R
25	Birmingham	Dr. Drummond	48	M	Oct. 6	R
26	Hednesford	Dr. Marsh Stiles	41	S	Dec. 2	R
27	Birmingham	L. T.	40	M	1881. Aug. 8	R
28	Worcester	Dr. Woodward	51	M	Sept. 12	R
29	Llandulas ..	Dr. Turner	48	M	" 24	R
30	Dudley	L. T.	46	M	1882. Jan. 11	R
31	Birmingham	Dr. Leech	28	M	Feb. 17	R
32	Birmingham	Dr. Drury	37	M	Mar. 3	R
33	Walsall	Dr. Oliver	28	M	May 5	R
34	Stonehouse	Dr. Walters ..	27	M	June 7	R
35	Birmingham	L. T.	27	S	" 24	R
36	Bickenhill	Dr. Quirke	50	S	July 10	R
37	Derby	Dr. Boswell	48	M	Sept. 20	R
38	Birmingham	L. T.	26	M	Oct. 7	R
39	Wolverhampton...	Dr. Scott	44	M	Nov. 6	R
40	Derby	Mr. Legge	53	M	" 21	R
41	Southampton	Dr. Lake.....	39	M	Dec. 17	R
42	Wolverhampton...	Dr. Moore	29	M	1883. Jan. 28	R
43	Birmingham	L. T.	27	S	Mar. 13	R
44	Derby	Dr. Copestake	32	W	" 31	R
45	Longton	Mr. Folker	54	S	April 12	R
46	Birmingham	Mr. Freer	32	M	" 14	R
47	Birmingham	L. T.	54	M	" 21	R
48	Birmingham	Dr. Hickinbotham..	43	M	" 27	R
49	Gloucester	Dr. Ellis.....	40	M	" 28	R
50	Birmingham	L. T.	32	M	June 11	R

No.	Residence.	Medical Attendant	Age	M OF S	Date	
51	Coleshill	Dr. Clark	28	M	July 2	R
52	Abergele	Dr. Griffiths	32	M	" 30	R
53	Kidderminster ..	Dr. Jotham	55	S	Aug. 16	R
54	Walsall	Dr. Hubbard	37	M	Nov. 4	R
55	Alderley	Dr. Smith	58	S	" 6	R
1884.						
56	Birmingham	L. T.	42	M	Jan. 7	R
57	Oswestry	Dr. Beresford	54	M	" 19	R
58	Birmingham	Dr. Craig	37	M	Mar. 12	R
59	Birmingham	L. T.	32	S	" 13	R
60	Sutton	Dr. Evans	18	S	" 21	R
61	Nottingham	Mr. Euan Smith ..	35	M	May 3	R
62	Llantrissant	Dr. Davies	48	M	" 26	R
63	Birmingham	Mr. Whitecombe	34	S	" 27	R
64	Coventry	Dr. Fenton	29	S	July 3	R
65	Birmingham	Mr. Harmar	29	M	Oct. 20	R
66	Birmingham	L. T.	25	S	" 31	R
67	Birmingham	Dr. Thomas ..	20	M	" 31	R
1885.						
68	Derby	Dr. Taylor	40	M	Jan. 23	R
69	Birmingham	Dr. Malins	25	M	May 15	R
70	Thirsk	Dr. Hartley	53	M	July 14	R
71	Birmingham	Dr. Shillitoe	40	M	" 20	R
72	Birmingham	Dr. C. Marriott	30	M	" 23	R
73	Birmingham	L. T.	31	M	" 25	R
74	Birmingham	Mr. Hallwright	29	M	Aug. 25	R
75	Leicester	Dr. Clifton	31	M	Sept. 18	R
76	Kidderminster ..	Dr. Addenbroke	34	M	" 28	R
1886.						
77	Stroud	Dr. Howsin	46	M	Jan. 15	R
78	Abergavenny	Mr. Shillitoe	30	M	Feb. 23	R
79	Watham	Dr. Emmerson	55	M	Mar. 17	R
80	Wolverhampton ..	Dr. Lycett ..	38	S	June 9	R
81	Birmingham	L. T.	39	M	" 16	R
82	Coventry	Dr. MacVeagh	39	M	Oct. 13	R
83	Malvern	Dr. Weir	29	M	" 29	R
84	Birmingham	Mr. Bracey	37	S	Nov. 29	R
85	Rugby	L. T.	43	S	Dec. 13	R
1887.						
86	Hawick	Dr. Calvert	37	M	Feb. 19	R
87	Kettering	Dr. Hawkins	46	M	Mar. 7	R
88	Warrington	Dr. Adams	22	S	July 15	R
89	Birmingham	L. T.	39	M	Aug. 20	R
1888.						
90	Bridgnorth	L. T.	25	S	Jan. 15	R
91	Harrogate	Dr. Souter	42	M	Mar. 5	R
92	London	Dr. Sykes	41	M	May 31	R
93	Tipton	Mr. Hicks	49	M	July 30	R
94	Great Grimsby ..	L. T.	35	M	Aug. 30	R
95	Bonau	L. T.	61	M	" 31	R
96	Redditch	Dr. C. Smith	22	S	Sept. 14	R
97	Whaley Bridge ..	Dr. Stirling Anderson ..	26	M	Oct. 18	R
98	Leicester	Dr. Bryan	22	M	Nov. 3	R
99	Birmingham	Drs. Jones & Wilson ..	40	M	" 28	R
	Nottingham	Dr. Thompson	50	M	Dec. 15	R
1889.						
100						
101	Cleckheaton	Dr. Sykes	25	S	Jan. 11	R
102	Cadoxton	Mr. G. Neale	34	M	" 11	R

D

TREATED BY ABDOMINAL SECTION.

No.	Residence.	Medical Attendant.	Age.	M. or S.	Date.	
1	Bromyard	Dr. Etheridge	42	M	1878. Jan. 19	R
2	Walsall	Mr. Gwinnet Sharp..	22	M	1879. Feb. 3	R
3	Birehills	Dr. Flynn	45	M	July 7	R
4	Birmingham	Mr. Hallwright	37	M	Dec. 13	R
5	Birmingham	Mr. Hallwright	30	M	" 22	R
6	Walsall	Dr. Gordon	28	M	1880. Jan. 5	R
7	Wolverhampton...	{ Dr. Millington & Dr. Blackford }	29	M	" 21	R
8	Birmingham	L. T.	28	M	July 5	R
9	Birmingham	Dr. Drummond	27	W	" 10	R
10	Birmingham	Dr. Kenny	17	S	Sept. 3	R
11	Wolverhampton...	Dr. Lycett	19	S	Nov. 11	R
12	Wolverhampton...	Dr. Totherick	11	S	1881. Jan. 7	R
13	Birmingham	Dr. Drummond	27	W	" 9	R
14	Birmingham	Dr. Smith	33	M	Aug. 2	R
15	Birmingham	Dr. Fairley	36	M	" 17	R
16	Liverpool	Dr. Macfie Campbell	22	S	Sept. 29	R
17	Birmingham	Dr. Hickin	27	M	Nov. 12	R
18	Birmingham	Dr. Newton	18	S	Dec. 30	R
19	Birmingham	Dr. Taylor	32	M	1882. Jan. 13	R
20	Bilston	Dr. Price	36	M	June 29	R
21	Coventry	Dr. MacVeagh	26	M	July 28	R
22	Birmingham	Dr. Edgintou	23	M	Oct. 22	R
23	Brierley Hill	Dr. Ellis	29	M	Nov. 25	R
24	Birmingham	Dr. H. C. Wilson ...	41	M	1883. Jan. 27	R
25	Birmingham	L. T.	37	M	Feb. 22	R
26	Birmingham	Dr. Boddy	38	S	July 12	R
27	Coventry	Dr. Fenton	15	S	1884. Mar. 6	R
28	Stourbridge	Dr. Bailey	25	M	July 18	R
29	Birmingham	Dr. Nicholls	29	S	Dec. 8	R
30	Walsall	Dr. Somerville	26	M	1885. Nov. 1	R
31	Stourbridge	Dr. Pearson	14	S	1886. Feb. 5	R
32	Cardiff	Dr. Ross	26	M	April 12	R
33	Skipton	Dr. Cresswell	29	M	1887. July 8	R
34	Birmingham	Dr. Notley	31	M	1888. May 8	R
35	Birmingham	Dr. Patrick	31	M	June 8	R
36	Birmingham	Dr. Jones	18	M	Nov. 14	R
37	Leicester	Dr. Hindle	40	M	1889. Jan. 23	R

VI.

ANATOMY AND PHYSIOLOGY OF THE OVARY.

WITHIN the last twenty years there has grown up a taste—perhaps I had better say a fashion, lest it should not prove permanent—for popular instruction in biology, and this tendency has had results of the best kind. Among others, it has enabled us to teach women, even girls, a great deal which deeply concerns their welfare, in a way which cannot, or, at least, ought not to offend any. It must ever be regarded as a misfortune that the most important functions of life—those of reproduction,—and the most important relations of society—those of marriage,—have usually been shrouded in mystery and darkness, have been wilfully misrepresented to the inquiring and innocent mind of youth, and have been left entirely for their solution to the personal speculations of each adolescent.

Now, by simply telling the life-history of a flower, and by the gentlest hint that what is true there is true all through life up to its highest developments, we may convey all the instruction that is needed, and all that is demanded in the interests of humanity. Teach a child the functions of the anther, the stigma, the pollen, the ovary, and the seed-capsule; let him or her see the conjugation of the *spirogyra*, and the child will be armed with a knowledge which will do much to prevent mischief, both moral and physical.

Between the simple mass of protoplasm enclosed in a structureless capsule of cellulose which forms the ovum of the *alga*, up to the complex ovum of the mammal, with its vascular follicle, there is a marvellous difference in elaboration of detail, but no difference in principle. The cellulose capsule is ovary and uterus in one, and the conjugating buds are at once vagina and oviduct; and from this simplicity the complexity arises only from specialization of structure, and not from the introduction of anything new in principle.

In the *algæ*, and in many other instances even in animal life, as the *aphides*, we have two principles of reproduction, or rather of continuation: the first is the reproduction of the *zoospore* (swarm-spore), which is effected without the conjunction of two cells, and of which we have the solitary trace, in mammals, of the so-called dermoid tumour of the ovary; the second method is the formation of the *zygospore* (resting-spore) by the conjunction of two elements, male (pollen-grain, antherozoid, or spermatozoid) and female (ovule, oöspore, germ-cell, germinal vesicle), and with that process alone the human ovary has to do in its complete

function. It must not be forgotten, however, that the zoöspore and the female part of the zygospore are essentially the same, that their fundamental functions are exactly the same, and that the properties introduced by the addition of the sperm-cell seem rather to be an extension of those already existing than the creation of new ones. How far this analogy is extended to mammals, and especially to man, and how far it has been curtailed, is one of the most interesting questions of biology; and yet it is one upon which we have as yet absolutely no information.

Much unnecessary confusion has been introduced into physiological writing and teaching by the use of different names for the same thing in different places. I must here repeat the protest I have frequently made, in my lectures on biology, against this practice, and my prediction that the whole of our nomenclature will have to be revised and this confusion reduced to order. For example, why should the male element be called a pollen-grain in the foxglove, an antherozoid in an alga, and a spermatozoid in a mollusk? It would be much better to call it an antherozoid in every instance, and still better would it be to drop our old-fashioned names, as *Graafian follicle*, *discus proligerus*, in human anatomy, and give to these structures names like *oögonium*, which would indicate their common and real biological significance.

It is, I fear, beyond my power to introduce such a reform, yet in the following pages I shall do my best to make such terms more familiar to the purely medical reader.

It is wholly impossible to discuss the pathology and treatment of the diseases of a structure like the ovary without a full understanding of its anatomy and physiology; and here we enter upon a field vast and as yet unexhausted. During the last forty years perhaps no organ in the body has been so much written about as the ovary; yet much remains to be told, and still more to be discovered. To the naked eye nothing could look more uninteresting and unimportant than a human ovary, and yet upon it the whole affairs of the world depend. As far as the individual owner of the gland is concerned—certainly for her comfort, and, if we take with it its appendages, for her life as well—it is the most important organ in her body.

The descriptions given of the rough anatomy of the organ coincide, of course, closely enough; but between those of its minute structure, its development, and the processes carried on in it, there is considerable diversity of opinion.

From 1870 to 1875 I was much engaged in these investigations, but since then I have been too much engaged in practice to follow them out as fully as has been done by others, more particularly by the late Mr. F. M. Balfour, the distinguished embryologist. With his conclusions and descriptions, my own

work, so far as it has gone, most closely agrees, and therefore, in this part of my subject, I am greatly indebted to his papers for my descriptions; and while I do not desire to depreciate the efforts of other workers, I am bound to say that Mr. Balfour gives by far the most consistent and complete results.

The ovaries are, like most other organs in the body, bilaterally symmetrical—that is, they are similarly situated, one on each side; yet here the usual rule of differences occurs, for I never have seen two ovaries from the same person exactly alike in situation, size, shape, or appearance. Infinite variety in all such details is to be observed, and any description can only be one which is applicable to a particular instance, or one of the average appearances.

The size of the ovaries varies with the different periods of life; and, to a less extent, so does their distance from the uterus. Henning's table of measurements is given below, the chief noteworthy fact given there being that the ovary is largest in the first six weeks after parturition. This may have been due to some pathological condition in those examined; but in connection with this it is curious to note the statements of horse-breeders, that a mare is more readily impregnated soon after the birth of a foal than at any other time.

Henning's Table of the Size and Position of the Ovaries at different Periods of Life and in various Social Conditions, in Centimetres.

		Childhood.	Virgins.	Unclaustr.	Married.	Multipara.	Puerperal.	Widows.	Divorced.	Menopause.	Old Age.
Length of ovary	Right	1·3 to 3·2	3·8	3·4	3·0	2·5	4·4	3·5	3·5	3·1	2·9
	Left		3·7	3·8	2·8	2·4	5·5	3·2	3·1	2·5	2·7
Breadth " "	Right	0·2 to 1·4	1·9	1·8	1·7	1·2	1·3	1·6	1·4	1·5	1·1
	Left		1·5	1·7	1·5	1·2	1·4	1·7	1·4	1·4	1·0
Thickness " "	Right	0·2 to 0·6	1·0	0·9	1·0	0·8	0·8	0·8	0·9	0·8	0·8
	Left		1·0	0·9	0·9	1·1	0·9	0·8	1·0	0·8	0·9
Distance from the uterus	Right	1·0 to 4·0	3·4	4·4	4·7	5·5	8·0	3·8	4·0	4·0	4·0
	Left		1·2 to 3·7	3·3	4·5	4·7	5·0	7·0	4·2	3·7	4·5
No. of cicatrices	Right	—	6	14	21	22	8	24	17	15	14
	Left		9	13	21	21	8	26	18	24	11

The colour of the ovaries when perfectly healthy, and in the living subject, is of a pinkish, pearly hue, with here and there a hazy blueness showing through the tunic where a follicle is either getting ready for the discharge of its nucleus or is disappearing after having fulfilled its function. When a follicle is either about to burst, or has just burst, the site is of a purple-brown colour. The glands are oval in shape, and flattened from before backward, the anterior surface being shorter and less convex than the posterior, which is more rounded. The outer extremity is also rounded and bulb-like, whilst the inner is somewhat pointed and

thinned off into the broad ligament. By these appearances the ovary on one side may be recognized from the other, if the glands are healthy. The average weight of the ovary is about ninety grains (Farre).

The glands are usually situated on a level with the inlet of the true pelvis, behind the Fallopian tubes and round ligaments. This statement must be taken to mean that they usually lie in a plane which is behind the plane of the Fallopian tubes and round ligaments when the patient is in the upright position. But it must be clearly borne in mind that the plane of the Fallopian tubes is a very complex one, and that the usual statements about the relations of these organs are wholly inaccurate. The tube leaves the uterus at its cornu, almost on a level with the position of the ovary. It curves upwards and slightly forwards, then downwards and round the ovary. It ends its curious curve by

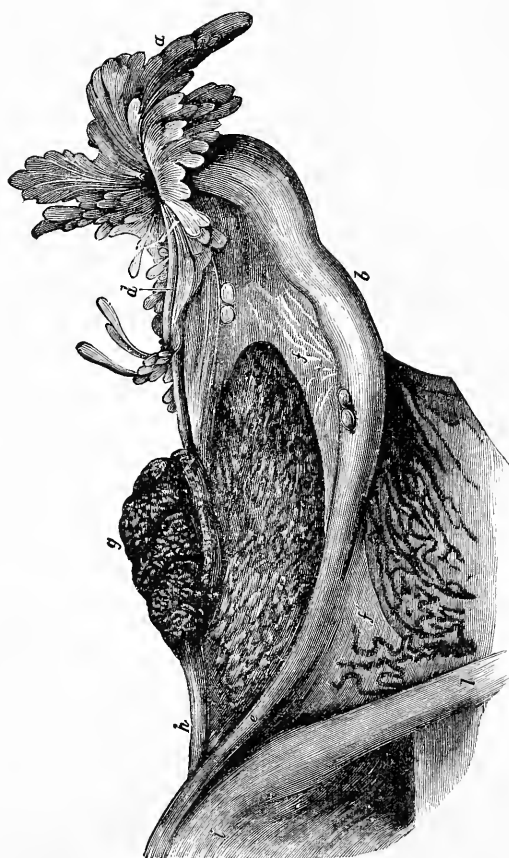


FIG. 25.—Front view of left broad ligament (after Richard): *a*, pavilion and fimbriae; *b*, body of the tube; *c*, opening of infundibulum; *d*, tubo-ovarian ligament (one of the fimbriae); *e*, uterine end of tube; *f*, meso-salpinx; *g*, ovary; *h*, utero-ovarian ligament; *i*, fundus uteri; *l*, round ligament; *k*, *d*, *b*, and *t* are the three points of folding of the broad ligament.

running backwards and slightly inwards, so that by this curve, aided by the fimbrio-ovarian ligament, the infundibulum comes to look upwards and forwards towards the ovary. Sometimes, when the tube is short, and the meso-salpinx abundant, the tube makes a hood over the ovary, completely covering it. In a few exceptions I have seen a crescentic double fold of the posterior layer of the broad ligament pass down behind the ovary, covering it like the hood of a "Nepenthes" gland. In all such cases the women have been sterile, probably because this hood has prevented the application to the ovary of the opening of the oviduct. I have seen this arrangement give great trouble in the removal of small ovaries.

Looking down upon the broad ligament from above, whilst it is on the stretch, it may be seen to be formed of three folds, of which the ovaries occupy the posterior, the Fallopian tubes the middle, and the round ligament of the uterus the anterior, all these structures being enveloped by folds of the peritoneum in the same way as is the uniform distribution of this most interesting serous membrane.

Recent German writers, especially Waldeyer and Leopold, have asserted that on the posterior surface of the ovary the peritoneal layer does not exist. If so, it has become incorporated with the underlying coat, the tunica albuginea of after-life, for it must obtain a peritoneal covering during its developmental transition. If we consider these facts for a moment, we must conclude that the ovary must be enveloped by both an anterior and posterior layer, just as a piece of small intestine is, for the mesovarium always has two distinct layers.

Although in the after-life of the gland this posterior layer cannot be removed by the scalpel, it is represented by a layer of squamous epithelium, which covers the whole surface of the gland.

I have undertaken a special research on this subject, and find that the posterior surface, when treated by silver and other staining methods, displays the same stomata and stigmata as does the anterior surface, or indeed any other part of the serous surface, provided the delicate arrangements are not disturbed by clumsy handling or by chemical reagents. In this way I have satisfied myself that the statement that the posterior surface of the ovary is destitute of peritoneum is incorrect.

The broad ligament, derived from the foldings already alluded to, is composed of a process of peritoneum by which the membrane, leaving the anterior abdominal wall and the base of the bladder,



FIG. 26.—Diagrammatic section of broad ligament: O, ovary; B, Fallopian tube, showing meso-salpinx; D, mesovarium.

bends upward over the fundus of the uterus and the upper margin of the Fallopian tube, as far outward as its opening. It then dips down behind the uterus as far as the cervix, and passes backward and upward over the rectum. Just to the outside of the uterus it bends upward, over, and then down behind the round ligament of the uterus. Then over the Fallopian tube it bends down for a distance varying from half an inch to two inches, and makes a very distinct meso-salpinx, at the end of which the peritoneal cavity is opened into by the infundibulum. From the lower margin of this the folds are continued in an outward direction to the lateral parietes. From the posterior surface of the meso-salpinx the posterior fold bends upward over the anterior surface of the ovary in very many instances, though in others it passes straight over the gland from its upper margin on to its posterior surface—in such cases no mesovarium being found.

From the lower margin of the ovary the peritoneum passes downward to the flexure of the recto-uterine cul-de-sac. Between these two folds, besides the tubes and the ovaries, are to be found the parovarium on the outer side, the utero-ovarian ligament on the inner side, and some irregular and faintly marked bundles of muscular fibre, besides a quantity of loose connective cellular tissue.

Behind the right ovary lies the small intestine, and behind the left is the rectum—a fact of great importance in some of the pathological features of the gland. The ovaries, the parovarium, and the Fallopian tubes, and the vessels which supply them, lie outside the peritoneum really, and this also is a most important fact in their various diseases. The blood-vessels are the utero-ovarian and ovarian arteries and veins—the former derived from the internal iliac vessels, the latter from the aorta and vena cava. These latter vessels possess so much practical interest that a few words of special description must be given concerning them. The arteries, which are the homologues of the spermatic arteries in the male, arise from the aorta just below the renal branches, and pass obliquely downward over the psoas muscle. When they reach the brim of the pelvis they turn inward and forward (centrally toward the middle point), and run up to the ovaries between the folds of the broad ligament. They give off branches to the Fallopian tube and to the side of the uterus, where they anastomose freely with the branches of the uterine arteries derived from the internal iliac.

The veins have an analogous distribution. They arise from a venous plexus lying below the ovary and between it and the uterus—the so-called bulb of the ovary (Rouget), which has a free communication with the venous plexus at the side of the uterus. From this the ovarian veins have a direction corresponding with that of their arteries, with this important distinction—that the vein on the right side enters the inferior vena cava at an acute angle, and on the left side the vein joins the renal vein at a right angle.

It has long been known that, in the male, varicocele is much more frequent on the left side than on the right, and the explanation usually given of it was the pressure which is, or may be, exercised on the left spermatic vein by a loaded rectum. A much more exact explanation has resulted from a careful study of these veins by Dr. J. H. Brinton, of Philadelphia. His deductions from a carefully made series of inquiries result in the following:—

1. That the causes hitherto assigned are insufficient to account for the rare occurrence of varicocele on the right side.

2. That the cause of this non-occurrence is to be referred to the existence of a very perfect valve, hitherto unnoticed, at the termination of the right spermatic vein in the vena cava.

3. That no such valve exists upon the left side, at the junction of the spermatic with the renal vein.

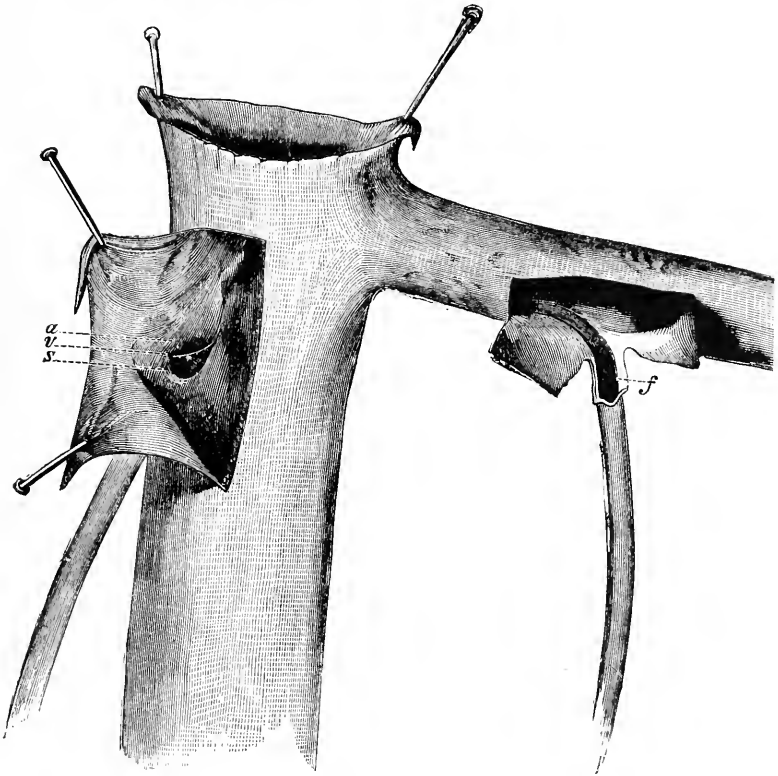


FIG. 27.—Dissection of the vena cava, emulgent and ovarian veins, showing the right ovarian valve; *a*, right ovarian vein; *f*, left ovarian vein, without valve; *v*, valve; *s*, sinus in front of valve.

4. That a similar valve exists in the analogous vein of the female—the right ovarian vein—but that there is none on the left side. (See Fig. 27.)

In this I think there is only one error to be noted: that is, that Dr. Brinton believes these valves have not been before noticed. This is not correct, for in the third edition of Gray's "Anatomy" (1864), now before me, it is distinctly stated that the spermatic veins have valves. Dr. Brinton's merit consists rather in showing that the left vein has not a valve, whilst the right vein is provided with one.

The physiological fact we have further to bear in mind concerning these veins is that during pregnancy they increase enormously in size. These facts explain those distressing cases of chronic ovaritis and ovarian hyperæmia which often start after a first confinement, and which are most frequently characterized by the greatest suffering being in the left ovary, which is always enlarged, and often dislocated down behind the uterus. These cases are often so intractable as to demand the removal of the ovaries as the only method of permanently curing the patients.

The nerves of the ovaries are derived from the spermatic plexus, which in its turn is derived from branches from the renal and aortic plexus. The spermatic nerves accompany the arteries to the ovaries. The Fallopian tube has a special branch from one of the uterine nerves—in this, as in other details, showing its method of development.

Dr. Elischer, from investigations made in the laboratory for embryological research of Prof. Michalkovics, in the University of Buda-Pesth, has satisfied himself that the nerves of the ovary in mammals enter into the substance of the organ in the form of medullated fibres accompanying the looped and tortuous vessels that pass to the hilum, and run also in the proper ligament of the ovary. Some of the fasciculi branch dichotomously till they reach the follicular layer of the periphery, where they lose their medullary sheath, and form loops around the follicles. Others form a coarse plexus around the vessels. The more mature the follicle—that is to say, the thicker the *membrana granulosa*—by so much the more distinctly can a still somewhat coarse plexus be seen, of tolerably thick nerve-fibres, in the substance of the follicular investment; and from this plexus another plexus, composed of more delicate fibres, forming a more elongated network, with numerous knots and varicosities, can be seen to arise, which is applied to the outer layer of the *membrana granulosa*. Some of the branches, he thinks, penetrate the cells of the *membrana granulosa*, and run up to the nucleus. He recommends the ovary of the sheep as the object best adapted for investigation.

Besides the normal pair of ovaries, accessory glands—or perhaps, to speak more correctly of most of the cases, separated cotyledons—are met with. I have not seen an example of

these, and my description is taken chiefly from the observations of Herman, De Sinéty, and Beigl.

Herman was, so far as I know, the first author to notice these interesting structures, and he describes the appearances in the body of a newly-born child, where, on the border of one of the ovaries, there was a small pedunculated body, which proved to be composed of normal ovarian tissue, with its follicles and epithelium, and having in the centre an ovum with its *macula germinativa*. Dr. De Sinéty rather spoils his interesting observation by suggesting that his case is especially noteworthy from the probability that, if the patient had lived, she would have been the subject of extra-uterine pregnancy. This is, of course, nonsense; but if she had had both ovaries removed for disease, she might still have become pregnant if this adventitious structure had been left. Similarly she might have been the subject of a third ovarian tumour.

Dr. Beigl has found similar structures eight times out of three hundred and fifty examinations. They were always situated at the hilum of the ovary, at the line of demarcation of the peritoneum (Waldeyer's line), and they varied in size from that of a hemp-seed to that of a small cherry (about 8 mm.) They generally were set upon slender pedicles, and as many as three were found associated with the same ovary. The subjects in which they were found were of all ages, and the substance of the structures was true ovarian tissue.

Waldeyer has described one instance in which as many as six of these additional or accessory ovaries, as he calls them, were found; but he regards them, in some instances, as out-growths from the ovary in the latter stages of its development. He names them "*Nebeneierstöcke*," which is evidently open to the objection that German writers have already applied that name to the parovarium. In doing so they are, however, mistaken, and I think Waldeyer right upon this point.

These accessory ovaries show, by the active growth of their follicles, that they have a distinct physiological importance.

Before entering upon the difficult and complex subjects of the development and minute structure of the ovary, a few words must be said upon the oviduct and that representative structure, the parovarium, as both of these have great importance in the diseases which truly belong to, or which may simulate, the true diseases of the ovary.

In some of the lower orders of fishes (ganoid) the ovaries shed their ova, as soon as they are ripened, into the peritoneal cavity, whence they escape by the abdominal pores, to be fecundated outside by the shed sperm of the male, as in all fishes. In such cases there is free communication between the peritoneal cavity and the outside water. In higher orders the ovaries are

tubular glands, the tubes being continued, as oviducts, to the outside, opening above and behind the anus. In all other vertebrata there is a break between the oviduct and the ovary; and the higher we go in the animal scale the more complex does this oviduct become, till we get to the marsupialia and mammalia, when a part of it is specialized for the retention of the embryo till it is less or more ready to maintain an independent existence.

At an early period of embryonic life in the mammal the primordial kidneys (Wolffian bodies) are each symmetrically provided with a duct—the Wolffian duct—which passes backward along the outer side of its corresponding gland, and opens posteriorly into the sac of the allantois.

Somewhat later another duct appears on the anterior surface of each Wolffian body, but remains throughout its whole extent distinct from this gland, and never functionally connected with it. Traced backward from the gland it soon comes in contact with the Wolffian duct, and together they form the genital cord. The Müllerian duct opens at its anterior extremity into the pleuro-peritoneal cavity, and posteriorly into the sac of the allantois. In the male the Wolffian ducts persist, and ultimately form the *vasa deferentia*, whilst the Müllerian ducts atrophy, with the exception of a small portion, which persists as the *vesicula prostatica*, or male uterus.

In all animals but the didelphous and monodelphous mammalia, the Müllerian ducts undergo no further modification of any great morphological importance, save in birds, where the right duct is atrophied at an early period and the left only is developed. But in the monodelphous mammalia the two ducts become united at a short distance from their posterior openings, and then, by the disappearance of the coalesced wall, form a vagina with two uterine openings; or, by a further coalescence, form a single vagina and a single uterus, into which two Fallopian tubes open, these tubes being the survivals, in the higher mammals, of the two Müllerian ducts, retaining their openings into what was the pleuro-peritoneal cavity before its division by the diaphragm. In some didelphous mammalia the two tubes remain separate throughout their length, giving two vaginae, two uteri, and two Fallopian tubes: and instances of all the varying conditions found in antecedent animals are found occasionally in women as reversions of type.

In female mammals the Wolffian ducts disappear almost entirely in most species, being permanently and constantly represented only by the apparently functionless organ of Rosenmüller (Figs. 28 and 29). When further survivals of them persist they are known as the canals of Gartner, which in a few mammals, as the cow and the pig, retain a large size, but serve no purpose, so far as is known. They commence above, lying in close relation

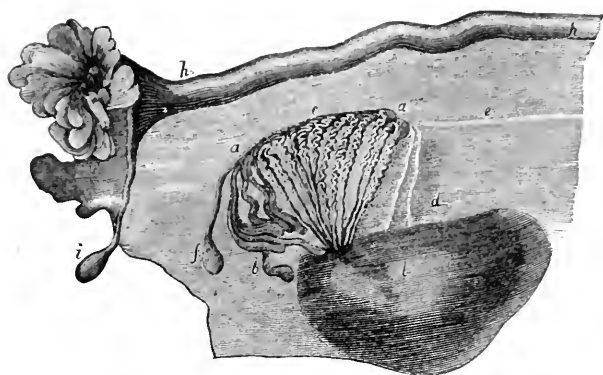


FIG. 28 (after Kobelt).—View of oviduct and parovarium from behind. *a, a*, inverted pyramid formed by convoluted tubules of parovarium; *b*, outer tubules, flask-shaped, and often dilated into cysts; *c*, atrophied Wolffian duct, or canal of Gartner (lower down); *f*, terminal bulb of Wolffian duct, known as organ of Rosenmüller; *h*, Fallopian tube, or altered Müllerian ducts; *i*, terminal bulb of same, known as the hydatid of Morgagni in the male.

to the organ of Rosenmüller, (*f*, Fig. 28), and run down either in the substance of the uterus, or close to it, between the layers of the broad ligament. They open into the urogenital sinus on either side of the meatus urinarius. In exceptional cases they are found in women, and even during life their openings in the position indicated may be clearly seen.

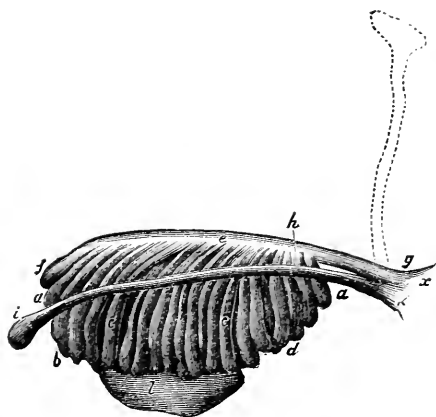


FIG. 29 (after Kobelt).—Wolffian body and ovary of embryo of the sixth week. *a, a*, tubules of Wolffian body; *e*, excretory duct; *f*, terminal bulb (organ of Rosenmüller); *h*, Müllerian duct; *i*, terminal bulb (*v.* Fig. 28s); *x*, urogenital sinus, into which both ducts open. The dotted outline shows bent position of Müllerian duct when it has become the Fallopian tube.

two tubes has so far advanced as to form the utero-vaginal canal, the remaining part of the tube is bent sharply downward and outward, and thereafter occupies its normal (nearly) horizontal position. It leaves the uterus at the cornu (ostium internum), at this part of its course through the uterine tissue being of very narrow calibre. From this point it extends outward for a distance varying in the adult from three to five inches, its diameter increasing slightly

I have seen two cases of hydromenorrhoea of a most extraordinary kind, in which, after great trouble, I discovered that the discharge was from Gartner's canals. These are narrated at page 101.

When, in the human embryo, the coalescence of

as it leaves the uterus, and contracting again at the ostium abdominale, where it opens out into the infundibulum. It consists of three coats, one derived from the folding over it of the peritoneum, as already described. The greater part of its wall is therefore in direct contact with the outside surface of the peritoneum. The lesser portion of the wall is in contact with the cellular tissue, which occupies the space between the two folds of the broad ligament, at the lower aspect of the tube (meso-salpinx) (Fig. 26). The middle coat is muscular, and consists of a faint layer of longitudinal fibres externally derived from the outer coat of the uterus, and a much thicker layer of circular fibres internally, continued from the inner uterine layer. The longitudinal fibres, according to my own observations, disappear entirely about the menopause, or soon after. The internal or mucous surface is thrown into a series of delicate longitudinal folds by the action of the circular fibres, an arrangement exactly similar to that which obtains in the œsophagus and urethra. The mucous surface of the tube is lined with ciliated epithelium, the movements of which are directed toward the uterus, and the function of which is certainly to prevent the passage of spermatozoa up the tube. If this were not so, tubal pregnancy would be much more common than it is. The movement of the cilia also undoubtedly aids the passage of the ovum down the tube, and prevents its adhesion to the wall should the ovum happen to become occupied by spermatozoa. At the ostium abdominale the tube expands trumpet-like, the expansion being formed by a series of fimbriæ, or laciniae, of two sizes, major and minor. The right tube is slightly longer than the left, and lies a little lower in the pelvis. This infundibulum (known also as the *morsus diaboli*) (a, Fig. 25) is large enough to embrace about one-third of the ovary, and has a curious tendency to enlarge as the ovary enlarges in diseased conditions. It also enlarges enormously, as well as the tube, in cases of cyst of the broad ligament where the tube becomes stretched over the cyst. I have seen a tube in such a case lengthened out to eleven inches, and wide enough to admit the forefinger for nearly four inches from the infundibulum.

The major fimbriæ have the minor fimbriæ arranged between them somewhat irregularly, and when a Graafian follicle is nearly ready to burst, the infundibulum is said to be applied over the part of the ovary where the ripe follicle is, and becomes attached to the surface by a slight cellular adhesion. If so, there must be some peculiar and wholly unknown selective influence which governs this adhesion, but it clearly is a mechanism not of universal or constant accuracy; for I have frequently, during abdominal sections, seen follicles just on the very point of bursting over which the infundibulum was not fixed. In such a case the ovum must fall free into the peritoneal cavity, and there

probably dies in the great majority of instances, unless it drops into the open mouth, and gets involved by the polyp-like arms of the infundibulum, and thus moved on into the uterus. There is reason to suspect, however, that in exceptional circumstances it there undergoes cystic expansion.

The infundibulum is covered by transitional columnar epithelium, and at the margin of the fimbriae it meets the squamous epithelium of the peritoneum, forming the only instance of the union of a mucous and a serous surface—in fact, the unique instance of an opening into a serous cavity.

Under ordinary circumstances, when the tube is healthy, its cavity is occupied by a small quantity of viscid mucus, and during menstruation this is replaced by blood of the usual dark, fluid character. Inflammation may occlude both ostia, and convert the tube into a cyst, occupied by serum (hydro-salpinx), or by blood (haemato-salpinx), or by pus (pyo-salpinx), of which conditions I have seen quite a vast number of cases.

The mucous surface lining the tube is disposed in an apparently irregular fashion in longitudinal folds, so that its lumen is almost closed by their approximation, as in the case of the urethra. Near the uterus these folds are simple, but toward the outer part of the tube sub-divisions are erected even to a third and fourth branching. These folds and the whole of the inner surface of the tube is covered by a single layer of ciliated columnar cells without any marked sub-mucous coat. The movements of the cilia are directed towards the uterus. The arterial supply is afforded by a special branch of the ovarian (spermatic) artery, and the veins form the pampiniform plexus.

The parovarium is formed by the remains of the tubular structure of the primordial kidney, or Wolffian body. It lies between the two layers of the broad ligament, between the upper and outer margin of the ovary and the Fallopian tube. It has the shape of an inverted pyramid (Fig. 28), the apex being applied to, but not attached to, the ovary. The tubules vary much in number—from three or four to thirty. They have always caecal extremities, and those on the outer side are always best marked, the outermost one forming the terminal bulb or organ of Rosenmüller. If a good example of the structure be carefully dissected, it will easily be determined that the tubes are lying loose in the cellular tissue of the broad ligament, and are not attached to either of its layers or to the ovary. This explains a characteristic feature of those Wolffian cysts which require operation. From the inner and upper angle of the parovarium runs the atrophied Wolffian duct—that is, when it is visible, which is not often the case. This duct is so thoroughly atrophied that I do not think any of the tubules have any intercommunication, as they would have if it were not.

Of the three layers of the blastoderm which forms, by various and most curious plications and developmental changes, the many organs of the body, only two—the mesoblast and hypoblast—take part in the formation of the organs we are considering.

The first change consists in an arrangement of cells which, radiating from a centre which forms a lumen, is found to travel down through the mesoblast from its dorsal surface, immediately under the epiblast, just outside the protovertebræ, between them and the pleuro-peritoneal cavity. This cavity is then lined by the epithelium, which ever afterward is its marked characteristic, and which then is known as the germinal epithelium.

In the chick, as early as the second day, this cellular track can be traced downward as a distinct ridge (Balfour), and it forms the primitive Wolffian duct. In other animals the changes are probably much the same, but for obvious reasons they have not been traced in sequence, and their dates are unknown. The next change is the appearance of a cell-mass outward into the pleuro-peritoneal cavity, in which the Wolffian body is formed, consisting, like the permanent kidneys, of convoluted tubules, commencing in Malpighian bodies with vascular glomeruli, and opening

into the duct. Upon this cellular mass lies the germinal epithelium of the pleuro-peritoneal cavity, from which the ovary is formed on the inner side of the Wolffian body—that is, the side looking toward the splanchnopleure. The germinative epithelium retains its columnar character, and becomes thickened to several cells deep, the mesoblast below it becoming also thickened, so that a distinct eminence is formed as a fusiform white patch or streak, extending, in its early stages, along the whole length of the Wolffian body, but subsequently becoming restricted to its superior portion. In the cells of the germinal layer are found the primitive

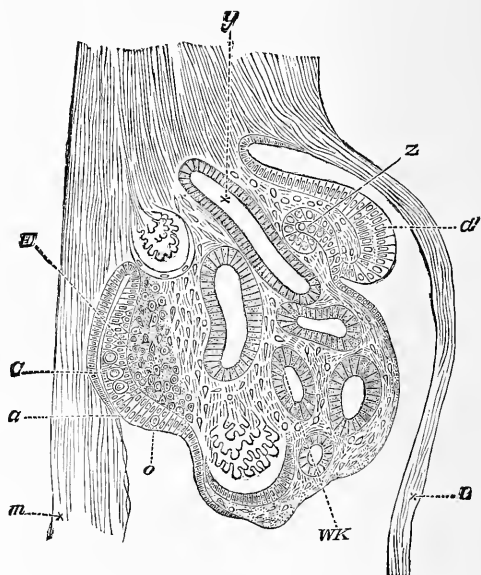


FIG. 30 (after Balfour).—*m*, mesentery; *L*, somatopleure; *a'*, portion of the germinal epithelium from which the involution to form the duct of Müller (*z*) takes place; *a*, thickened portion of the germinal epithelium in which the primitive ova (*C* and *o*) are lying; *E*, modified mesoblast, which will form the stroma of the ovary; *WK*, Wolffian body; *y*, Wolffian duct.

ova, developed by differentiation from the epithelial cells. This change is affected in the chick about the ninetieth hour of incubation, at which time it is quite possible to determine the difference of sex. In the human embryo the difference is not discernible till between the fifth and seventh weeks, authorities differing materially as to the exact date.

The structure of the early ovary consists of a superficial layer of the germinal epithelium (*g, e*, Fig. 31), and of a tissue internal to this which forms the great mass of the gland.

The germinal epithelium is a layer about 0.03 to 0.04 mm. in thickness, having two or three layers of cells with granular nuclei. The outermost layer is more columnar than the others, and its cells have nuclei rather elongated than round. The cells of this layer, though varying in size, have a larger provision of protoplasm.

The tissue of the body of the gland consists mainly of columns of epithelial-like cells, which stain more deeply with osmic acid than those of the germinal layer, having round nuclei and a more limited amount of protoplasm. Between its columns

runs up vascular stroma, formed of spindle-shaped and nucleated cells (*t*, Fig. 31). This tissue continues visible through the whole course of the development of the ovary till comparatively late in life, and during all the earlier stages it might be easily supposed to be playing some important part in the development of the ova, or to be a part of the germinal epithelium, from which it has only occasionally any well-marked line of demarcation. In this tissue and at the base of the ovary are seen a number of canals which have given rise to the view advanced by Pflüger, that the ovary was developed

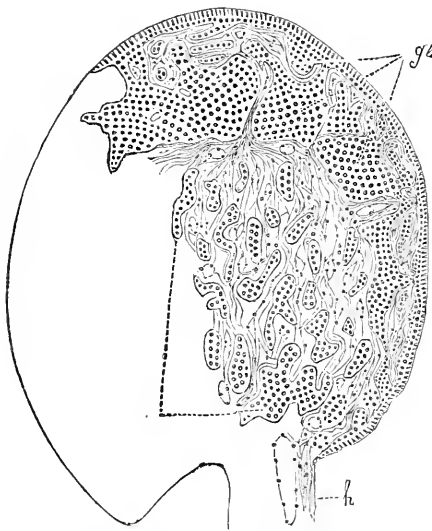


FIG. 31 (after Balfour).—*g, e*, germinal epithelium; *t*, trabecule; *h*, hilum, with canal.

as a tubular gland. This view has, however, been almost universally abandoned, and, in my own researches, I have seen no evidence which entitles it to serious consideration. These tubules are clearly derived from the Malpighian bodies of the Wolffian structures, and are mere survivals.

The germinal epithelium grows rapidly in thickness by the division of its cells, and the vascular stroma greatly increases in quantity, so that the epithelial tissue is honeycombed by the vascular trabeculae, which are so arranged as to divide imperfectly the epithelium into two layers, separated by a space occupied by connective tissue and blood-vessels. The outer part is relatively thin, and is formed of a superficial row of columnar cells, and one or two rows of more rounded cells, among which can be recognised the primitive ova (*p, o*, Fig. 32)

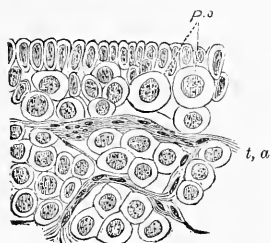


FIG. 32 (after Balfour).—*p, o*, primitive ova; *t, a*, tunica albuginea; *c, e*, central epithelium.

by their size, their granular nucleus, with the characteristic reticulation, and their abundant protoplasm. The inner layer is much thicker, and formed of large masses of rounded cells, and the two layers are connected by numerous trabeculae, the stroma between which eventually gives rise to the connective-tissue capsule, or *tunica albuginea* of the adult ovary.

Subsequently in the course of development the germinal epithelium becomes still more thickened to .38 mm., and becomes marked into three distinct layers (Fig. 33, *g, e*). These consist of an outer epithelial layer, having an average thickness of .03 mm.; a middle layer of small nests, about 1 mm. in thickness; and an inner layer of larger nests, which has an average thickness of .23 mm. In these three layers the epithelium has undergone important modifications. The greater part of the granular contents of the nuclei of the cells has become clear, the other part remaining as a mass taking the colour of staining materials very darkly, and somewhat later taking a stellate figure, these two forms being spoken of as the granular and stellate stages of the nucleus. Still later the nuclear mass forms a beautiful

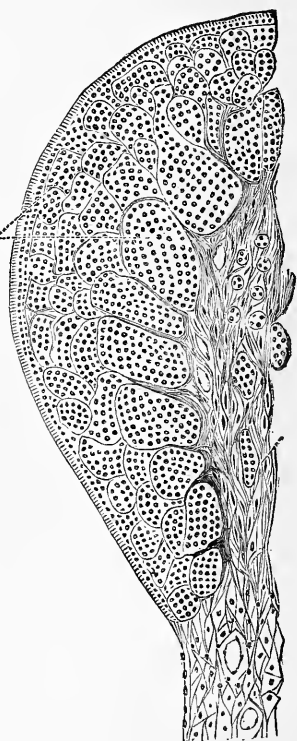


FIG. 33 (after Balfour).—*g, e*, germinal epithelium in three layers; *h*, hilum, with cells, *c, c*.

reticulation, as seen in the

spores of the algæ.

As already said, some of the cells enlarge, and are recognized as the primitive ova, and these are now increased in number. Others of the cells again diminish in size, becoming of an oval form, the nucleus retaining its primitive character, and not going through the changes above described. The cells subsequently form the epithelium of the Graafian follicle. They may be seen arranging themselves around the primitive ova just formed. At the hilum of the ovary the tubules (*c, c*, Fig. 33) have by this time almost disappeared.

As the ovary grows, the outermost layer of the epithelial elements becomes more and more separated by the fusiform-cell stroma, and the nests of the middle layer become smaller, and finally the arrangement and formation of the Graafian follicles become completed, and in the typical epithelial nest are to be seen fully-formed follicles with the permanent ova, completely

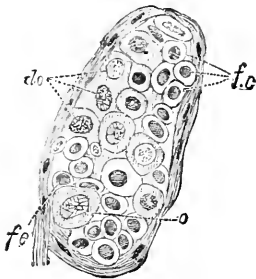


FIG. 34 (after Balfour) —Nest from middle layer, showing formation of follicular epithelium: *o*, primitive ovum; *f, c*, cells forming follicular epithelium; *d, o*, cells which disappear.

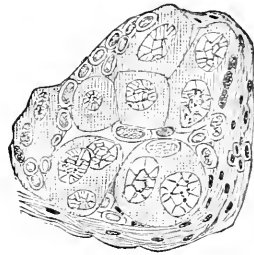


FIG. 35 (after Balfour) —Typical epithelial nest.

enclosed in a cavity occupied by fluid and lined by epithelium; smaller ova (*d, o*, Fig. 34) not so enclosed; smaller cells (*b, c*), with modified nuclei of doubtful destination; and small cells (*f, c*) obviously about to form follicular epithelium. The inspection of a single such nest, says Mr. Balfour—and in this I fully concur—is sufficient to show that the follicular epithelium takes its origin from the germinal epithelium, and not from the stroma or tubuliferous tissue.

Concerning the small cells with modified nuclei, Mr. Balfour suggests three possibilities, and thinks they may have all three destinations: that they become cells of the follicular epithelium, are developed into ova, or are absorbed as a kind of food by the developing ova.

The isolated follicles are now formed by ingrowths of the connective-tissue stroma cutting off fully-formed follicles from a nest. They occur only at the very innermost border of the

germinal epithelium. This is in accordance with what has so often been noticed about the mammalian ovary—viz., that the more advanced ova are to be met with in passing from without inward.

In the further growth of the ovary the pseudo-epithelium is formed of a single layer of columnar cells with comparatively scanty protoplasm. In it there are present a considerable number of developed ova. A layer of connective tissue, the albuginea, exists below the pseudo-epithelium, which contains a few small nests with very young permanent ova. In the layer of medium-sized nests internal to the albuginea the ova have all assumed the permanent form, and are provided with beautiful reticulate nuclei with a nucleolus and smaller granular bodies. The majority are not provided with follicular

FIG. 36.—Further development of processes seen in Fig. 33.

investment, but among them are numerous small cells, clearly defined from the germinal epithelium, which are destined to form the follicle (Fig. 12). In the innermost layer of the germinal epithelium the outlines of the original large nests are still visible, but many of the follicles have been cut off by ingrowths of stroma.

The general conclusions from Mr. Balfour's researches are that the whole egg-containing part of the ovary is really the thickened germinal epithelium, and it differs from the original thickened patch or layer of germinal epithelium mainly in the fact that it is broken up into a kind of meshwork by growths of vascular stroma.

It will be seen, therefore, that the formation of true Graafian follicles goes on very early in the life-history of the ovary, long

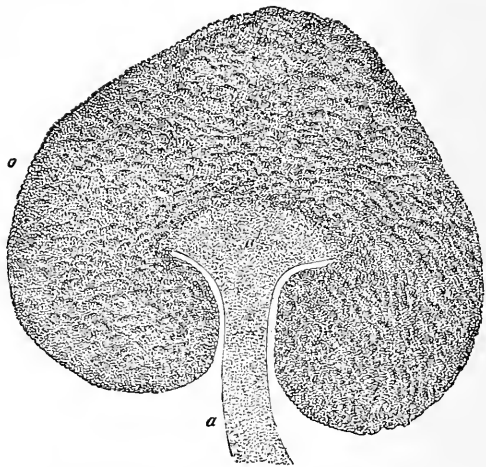
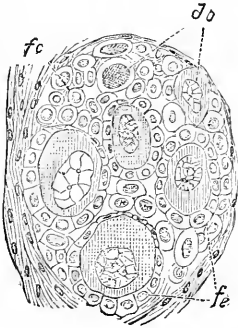


FIG. 37.—Section of ovary of human embryo at third month (after Kölliker), slightly magnified. *a*, mesovarium; *a'*, vascular stroma of hilus; *b*, gland-substance. $\times 50$.

before the birth of the child, a fact which was pointed out by Negrison in 1712, by Valisneri in 1733, but which received but little attention until the writings of Carus (1837) and Ritchie (1842) attracted attention to this most interesting subject. Since then it has been most exhaustively discussed by many observers, and finally and, as I think, conclusively unravelled by F. M. Balfour. The neglect which these indisputable facts have received, specially in connection with various theories of menstruation, is simply astonishing, as will be seen by-and-by. The vulgar belief is that menstruation is due to ovulation, and that the two processes are concurrent and contemporaneous. But ovulation goes on from infancy to old age, whilst menstruation is confined to a period of life between, roughly speaking, fourteen and forty-eight. Menstruation cannot, therefore, be caused by ovulation, but must have some nerve cause with which both processes are, in all probability, closely associated.

There are numerous other facts which go to establish the same conclusion, and these will be indicated in their proper place, and I allude to the subject here only because it is wholly impossible to understand the physiology of the female organs of generation unless we get rid of this indefensible and stupid error. Only a few months ago no less an authority than Professor Martin, of Berlin, fell into the mistake of showing how completely he has overlooked the facts narrated by a host of competent observers, and which may be verified by anyone able to use a microscope, that the process of ovulation, complete and regular, may be traced on the ovaries of infants. He blundered into an assertion that I had made a new and inaccurate theory of menstruation. I had done nothing of the kind. I merely substantiated the observations of Ritchie and Reeves Jackson—observations which no one has yet been able to upset. The great practical interest which this infantile ovulation has for surgeons is that the dropsical distentions of these follicles produce ovarian tumours occasionally in very young children; and Mr. Cullingworth, late of Manchester, has placed on record a most interesting observation where an undoubted ovarian tumour existed in a newly-born child, and Virchow and others allude to similar instances. By Mr. Cullingworth's courtesy I have been able to examine his specimen, and I have satisfied myself of the perfect accuracy of his description.

A most interesting observation is made by Dr. De Sinéty, who has been struck with the frequency of apparently cystic ovaries in children at the time of birth, and especially a few days after, and who has found, in the great majority of the ovaries of children near the full term, or who die a few days after mature birth, that Graafian follicles are visible to the naked eye if sections of the ovaries are made. He also says that these large follicles, having

arrived at a certain stage of development, begin to disappear, and

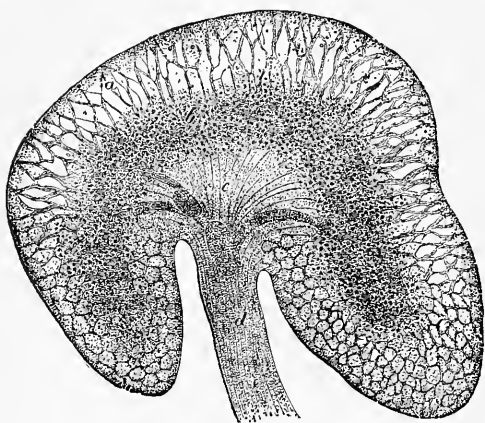


FIG. 38.—Section of ovary of human embryo at sixth month. *a*, external epithelial layer; *b*, internal epithelial layer; *c*, vascular stroma of hilus; *d*, mesovarium. $\times 50$.

that the processes of their retrogression and the different phases of the cicatrices which they leave behind them can be followed. He draws attention to the fact, familiar to everyone, that it is no unusual thing to see slight swelling of the breasts of newly-born children, not only female, but male, and the secretion of a milky fluid. This generally ceases in a few days, and the gland remains quiescent till the puberty of girls, and

throughout life in boys. He thinks the ovarian activity is associated with the premature mammary effort, and he quotes Merkel (*"Ueber die Entwicklung im inneren der Samenkanälchen," Archiv für Anatomie und Phys.*, 1872), to the effect that in the new-born male a considerable proliferation of the epithelium of the testicle is to be observed, together with the appearance in that organ of round cellules similar to those from which spermatozoa are derived in later life, and these cellules disappear shortly after birth, and are not found again till after puberty. Similarly, De Sinéty has not found developed ovarian follicles in the years of childhood.

Haussman's observations, made upon eighty-four examinations, completely substantiate De Sinéty's conclusions. He found premature development of the Graafian follicles in ten per cent. of the ovaries examined, and he puts forward the important suggestion that such a condition, by exhausting the stock of the ova, or by prematurely discharging the activity of the ovaries, may be a possible and hitherto unsuspected cause of sterility.

These observations cast a most interesting light upon the parthenogenetic theory of the development of dermoid cysts which originated with Ritchie, and which I have more completely elaborated in its appropriate chapter.

This ovarian activity seems to cease about the third month, for after that time, though mature Graafian follicles can be discovered by microscopic examination, they rarely are large enough to be visible to the naked eye; the bands of connective

tissue, with the fusiform cells or nuclei, increase in size, and the tunica albuginea becomes more marked, so that by the seventh month the ovary presents all the appearances which it has just before puberty, and up to that time little else can be said of the history of the gland. The only point which yet remains to be settled, and for the settlement of which I have not come across any evidence, is whether or not the premature Graafian follicles ever rupture and discharge their nucleus into the peritoneal cavity. There is some probability that they do, for reasons that I shall give when speaking of wandering ova.

That most of the Graafian follicles thus produced—that, in fact, a very large number of those produced in adult life, including many which reach almost to maturity—die without rupturing and discharging their egg-nucleus is rendered certain by the observations of every writer on the ovary, and I have already indicated, from Balfour's writings, the possibilities of their ultimate fate.

In a very remarkable paper by Dr. Creighton, of Cambridge, published in the thirteenth volume of the *Journal of Anatomy and Physiology*, that author sets himself to answer the question, What becomes of Graafian follicles within which the ovum has decayed? The conclusions he comes to are not such as I can yet see any way to accept, for among many hundreds of sections of the ovaries of various animals in my possession I cannot find in one indications of the structures which he describes, and the appearances he figures seem to me to be such as may arise from peculiarities in the preparation of the sections, and in their direction. I can, for instance, easily accept the appearances at A, B, C, and D, Fig. 39, as being sections or slices off the top of a Graafian follicle, and the drawing at G may similarly be a slice out of a corpus luteum, as may also be the figure at F; but I must say that I completely fail to follow the reasoning which would bring us to regard these forms as being homologous in any way with the cortical substance of the supra-renal body figured at H. The paper itself is well worthy of perusal, as being full of information of undoubted value, and it may be that some of Dr. Creighton's conclusions may receive a fuller acceptance than I can give them; wherefore, in order to draw attention to them, I give the following summary of them, so far as they deal with the fate of the decaying Graafian follicles:—

“The substance of the ovum, including vitellus, germinal vesicle, and spot, disappears, and the zona or vitelline membrane is found more or less empty and collapsed, as a strong thick-walled vesicle, of homogeneous structure, yellowish colour, and either ovoid in shape or somewhat folded. This tough membrane evidently resists the influences that cause the vitellus and germinal vesicle to disappear, and it is difficult to discover what eventually becomes

of it. At all events, in later stages of obsolescence of the Graafian follicle it is no longer to be seen, and the place of the follicle is marked only by the persisting belt of follicular epithelium. The fate of the enclosing zone of epithelium is in marked contrast to that of the ovum within it; in proportion as the latter shrivels

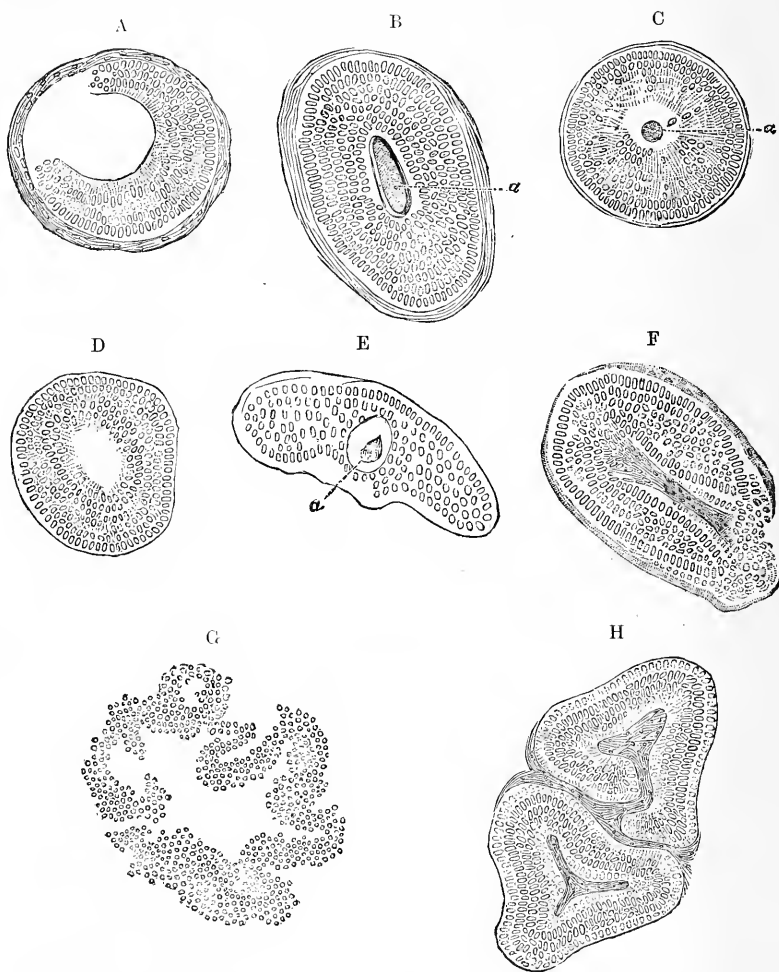


FIG. 39 (after Creighton).—Obsolescence of Follicles, various stages.

and collapses, the former assumes certain determinate and fixed characters, by which it may be always easily recognized in the midst of the ovarian stroma. The follicles drawn in Fig. 39 illustrate various stages in the process of obsolescence. The follicle A exemplifies one of the most fundamental changes.

The ovum is wanting in the centre, and the zone of follicular epithelium persists on one side; the point that it is of importance to observe is the form of the epithelial cells.

"The follicular epithelium does not, in the earlier periods of life, present the usual characters of an epithelium; the cells are round and almost nuclear, or without cell-substance. Under ordinary methods of preparation, and under a moderate magnifying power, they look like naked nuclei, just as the lymphoid cells of a lymphatic gland do under the same circumstances. As the follicle becomes riper the epithelium becomes more cylindrical; it is at the two poles of the nucleus, and not uniformly all round, that the protoplasm collects. This elongation of the epithelium, which is never very pronounced in the follicle destined to extrude its ovum in the ordinary course, becomes quite obvious where the ovum decays within the cavity. The cells are then seen (as in A, Fig. 39) to be greatly elongated cylindrical cells. In B and C the elongation of the epithelium, and the corresponding shrivelling of the ovum, are seen together; at *a*, in the centre of each follicle, is the thick, structureless zona of the ovum, which appears to be as if compressed or encroached upon by the lengthening radial cells of the follicular epithelium. At the same time the ends of the cylindrical cells that abut upon the zona appear to have acquired a common bond of union, like a basement-membrane. At D is represented a belt of follicular epithelium, broken at the upper side, and without any traces of the ovum within it. The follicle E exemplifies perhaps the most common appearance of the belt of epithelium surviving after the abortion and disappearance of the ovum; the originally circular belt (in section) has become almost straight, and the shrivelled zona of the ovum lies toward its under surface, and almost clear of it. The different forms of the belt of follicular epithelium depend partly on the plane of section; but there is little doubt that the originally circular belt (as it appears in section) unbends, and becomes a slightly curved cylinder, the shallow concavity of which corresponds to the original central space where the ovum lay. At F is shown the belt of epithelium doubled up, with a stalk of connective tissue issuing from its concavity. These various surviving conditions of the follicular epithelium appear to belong to follicles which had not become greatly expanded; the ovum had filled the central space exactly, and there had been no development of *liquor folliculi*. There are, however, aborted follicles of a much wider circuit, such as that represented at G; in this case the extensive belt of epithelium is thrown into folds, and it is further noticeable that the elongation of the epithelial cells is hardly perceptible, and that there is no uniform basement line either on the outer or inner surface of the belt.

"The peculiar cortical structures of the supra-renal bodies, and their position relative to the rest of the organ, may be readily made out in any good section of a well-prepared supra-renal of the horse. Fig. 39, H, is a low-power view of such a section, made perpendicular to the surface. The outermost stratum is a zone of connective tissue of considerable thickness. Next to that comes the zone of peculiar structures above referred to."

These peculiar cortical bodies of the supra-renals Dr. Creighton regards as homologous to the remains of Graafian follicles in the ovary from which the ova have not been discharged, but have decayed. His conclusion is that "the morphological resemblance between the ovarian and the supra-renal structures is not only close, but it is complete." I must, with all due deference to the work of an observer of so much distinction, say that, so far as I can see, this position has yet to be proved.

What has already been said about the growth and ripening of Graafian follicles before puberty constitutes one of the many arguments in favour of the view that menstruation and ovulation are wholly distinct processes, and abundant examples can be given of them being carried on each independently of the other. The statement constantly made in text-books that, if the ovaries are extirpated or become atrophied, menstruation does not reappear, is not accurate; and equally incorrect is the assertion that the first ovarian dehiscence corresponds with the first appearance of the menses. It is perfectly certain that ovulation is by no means a periodic process, in the sense of being monthly; and the fact that a periodic flow from the uterus is almost confined to the human race is sufficient to show that it is not in the ovaries that we have to look for the cause of this curious and objectionable phenomenon, for which Johnson alone has so far suggested a useful purpose. Where this cause does exist we do not know, but it is quite certain that, as it continues for months, in some cases, after the removal of both ovaries, it cannot be in those glands. Nor is it in the uterus; for in three cases where I have removed the uterus as completely as it can be done, menstruation has persisted ever since—in one of them for nearly seven years. Removal of the ovaries alone is followed by immediate and complete arrest of menstruation in about fifty per cent. of the cases. Removal of both tubes, with or without the ovaries, is followed by the same arrest in about ninety per cent. of the cases; and I suppose that in hysterectomy the arrest occurs in at least ninety-seven per cent. But it is the exceptions, in such a case as this, which prove the rule, and I suspect that we shall some day find a special nerve mechanism which is the real cause and governor of the phenomena of menstruation; and this is certain to be ganglionic, for a ganglionic system governs all other rhythmic phenomena. This must of course be in

association with ovaries, tubes, and uterus alike, yet it may be really independent of all of them. My pupil, Dr. A. W. Johnstone, has pointed out a large nerve-trunk which lies in the broad ligament, in the angle between the tube and round ligament, close to the uterus. During the last two years I have always taken care to embrace the locality of this trunk with my ligature in removing the uterine appendages, and I have had a distinctly increased success in securing immediate and complete arrest of menstruation since I adopted this proceeding.

It is perfectly certain that no one has yet recorded one instance in which the tube has been seen fastened on to the ovary before or after the menstrual period of life, as it is supposed to be during that period. Yet ovulation goes on before puberty and after the climacteric freely. The change in size and vascularity of the tubes at puberty, and their diminution at the climacteric, and the beginning and cessation of their movements, form the most curious of all the remarkable features of those functional changes, and are quite enough to show either that the tubes are most markedly under the same periodic influence as that which produces the menstrual flow, or that they themselves are its cause. Finally, I have, during the last few years, had the opportunity of seeing the ovaries of a number of women whose abdominal cavities I have had to open for various conditions not connected with diseased ovaries, and I have not found that the ripening and discharge of ripe ova is concurrent with menstruation. Even if it were we could only conclude that the rupture of the ripened ovisac was caused by the menstrual turgescence, not that the ripening was the cause of the menstruation, for it is perfectly certain that ovulation does not occur every month.

From these facts, and from others which will be detailed in another chapter, I am persuaded that ovulation is wholly independent of menstruation, and *vice versa*; that the most important feature of the menstrual period is the movement towards the ovary of the trumpet-shaped opening of the tube, and possibly the grasping of the gland by it; that this grasping continues nearly throughout the period of menstruation, and that it is only a matter of the chance of there being a ripe ovisac within the grasp of one or other of the tubes that true ovulation—that is, the passage of the ovum into the uterus—takes place, and there is a possibility of conception. If this be not so, it is quite impossible to see how many married women escape having progenies immensely numerous, seeing the numbers of ripe ova which are produced, and the regularity of menstruation. If ovulation were coincident with menstruation, the probabilities of a woman with healthy organs, who married at twenty, and ceased to menstruate at forty-eight, would be to have eighteen children, instead of six, which is her average as at present. Besides this, the number of sterile women would be

greatly diminished, and the increment of the human population would exceed all management. Diminishing our death-rate, or—to speak more accurately, as we should, for we all must die—increasing the average death-age as we do, by the abolition of wars and zymotic diseases, it is not difficult to see that some other agency must step in to aid civilization. If we produced as many young as do the lower animals, civilization would be an impossibility: the life-struggle would be so keen that barbarism must prevail. The inevitable law of evolution has, therefore, secured some process—we do not yet know what—by which the proportion of reproduction is limited, and we are Malthusians despite ourselves. Look at the myriads of young procreated by fish, only to serve for food to themselves or birds. Between them and ourselves there is a change gradually effected through the whole scheme, till we produce, as a rule, one child at birth, occasionally two, and very rarely three or four. These exceptions are clearly atavic. In some of the higher apes there are signs of something like a menstrual period, but as all such features in animal history become perverted in confinement, we do not know much about them. But in the lowest human races the signs of human menstruation are very faint, their labours are very easy, and their whole sexual history different from that of the highly civilized races. It is abundantly proved that, just as civilization (and I use the word in its most literal sense) advances, so does the increment of sexual trouble among women. The flexions and atrophies, dysmenorrhœas and menorrhagias, which affect town-bred women are comparatively unknown to their peasant sisters, and the healthily abundant procreative power of a country labourer's wife is a frequent source of envy to the patrician dame.

In all this menstruation is the chief factor, and I suspect the want of synchronism between the embracement of the ovary by the oviduct and the discharge of the ovum, perhaps also the incomplete maturation of the ovum, will be found to be the most important features of the change.

That menstruation is a new feature in sexual life, introduced high up in the scheme, and has no analogy to the œstrus or rut among the lower animals, is surely proved by the close reasoning of Arthur Farre (article *Uterus*: Encyclopædia of Anat. and Phys.).

The changes effected upon the general system by the accession of puberty do not concern us here, and therefore I shall limit myself to those concerning the ovary and oviduct; and for the observations on which my conclusions are based I am indebted to my own researches entirely.

The structure of the ovary does not seem to be changed in the least by the accession of puberty, save in its vascular arrangements. Before puberty the mesovarium is thin and transparent, occupied

by arteries and veins probably as numerous as they are afterward, but straighter and much smaller, the veins especially being but slightly pronounced, and quite different from the appearance of a bag of purple worms which they often have in after-life. After puberty these vessels become convoluted and distended. The ovary itself is slightly increased in size, but no very marked alteration in this respect is to be made out—a matter upon which Henning's measurements are confirmatory. The chief alteration consists in a greater size of the arterioles, a thickening of their muscular coat, and their assumption of a helicoid form, which I have been wholly unable to recognize in the ovary prior to puberty. This, however, is an extremely difficult point to decide, for I greatly suspect that this helicoid arrangement of the arteries in the ovary, and perhaps in other glands, may be due to the degree of tension at which they are injected. It is at best difficult to make out, for the thickness of a transparent section seems but rarely to contain a complete coil, and however numerous and complete the coils may be, it is not difficult to see that the method of examination is such that they may be missed. I have, however, so often seen sections of such helices in ovaries after puberty, and especially in the glands of multiparous women—though I have often entirely failed to find indications of them in similar ovaries—that I cannot help thinking that there is some reason in their presence which will be found to affect the condition resembling the engorgement of erectile tissue which the ovary assumes during menstruation, but more particularly during pregnancy (v. Henning). In normally erectile tissue these helices have been regarded as the intrinsic mechanism of the engorgement—a view which I have never been able to accept, for I have never realized that they can be more than a means of permitting the elongation of the vessel when the diameter of the organ is increased. When it is empty, they are coiled up like the slack of a rope, and therefore it is that I have already said that the helices present in a microscopical section will greatly depend on the tension of the injection. If the organ is greatly distended the arteries will be straight; if slightly distended they will or may be coiled; and I think it quite possible that my not having found them in ovaries before puberty may be due to the fact that the tissue of the gland is then more easily affected by distention, and that their absence may be from faulty preparation. Still it is likely that the altered hæmic condition of the gland after puberty may produce them.

To inject an ovary before puberty is not an easy task, and to get the opportunity of examining one is rare. I have therefore not been able to get perfectly satisfactory results as to the condition of the vascular supply of the ovisacs. What evidence I have, however, shows that there is little difference in it from

what is found after puberty beyond this: that it is possible the vessels are all larger, though upon this point I can say nothing positively. But of this I am certain: that all the phenomena which occur in the rupture of an ovisac and the closure and healing of the cavity are in common occurrence before puberty, and that the characteristic arrangement of capillaries in what is called the *corpus luteum* can be seen long before the occurrence of menstruation.

Spiegelberg says (*Monatschrift für Geburtskunde*, 1867) that he has seen the inner layer of the ovisac distinctly marked off, and possessed of a yellow colour, as early as the second year of life. I certainly have seen, in one ovary of the ninth year, an appearance which I could not have told from an adult *corpus luteum* of at least two weeks after the rupture of the ovisac.

In fact, the whole process of ovulation goes on before puberty, and the only difference then made is the important addition of the carrying the ovum into the uterus, and the possibility of its being there impregnated. These additions, however, do not affect the function of the ovary, which was complete before that, as is proved by the parthenogenetic production of ovarian tumours, and, in comparative anatomy, by complete parthenogenesis.

It will serve our purpose, then, if we now complete the description of the normal anatomy of the ovary by detailing the history of an ovisac after its formation.

The mature human ovum measures $\frac{1}{120}$ of an inch in diameter, and its germinal vesicle probably about $\frac{1}{800}$ of an inch, though its exact measurement, free from yolk substance, has probably not yet been made. The nucleolus, or germinal spot, is about $\frac{1}{3000}$ of an inch in diameter. The ovum lies at first centrally in the ovisac, or Graafian vesicle, but in the ripening of the latter the ovum moves toward the periphery of the sac, and is always to be found close to the surface of the ovary when the sac ultimately bursts. This movement is variously explained, but the more certain processes are, the formation of a *liquor folliculi* by the solution of the epithelium, especially in the outer part of the sac, and the effusion of the fluid on the other side of the ovum, pushing the *discus proligerus* against the thinned wall. This wall is of two layers, the outer being formed of the stroma of the ovary and the peritoneum, and the inner, at first non-vascular, from the follicular epithelium. This inner layer rapidly thickens, becomes vascular, and takes on a distinct yellow colour, long before the follicle is ready to burst. It has been called the *membrana granulosa*, but this extra name does no more than describe one of its characters, and leads to confusion. It is the epithelial layer, and it thickens everywhere but at that point where the ovum lies in contact with it, ready to issue forth at the moment of rupture; and the ovum is lightly retained in its

place by a cellular attachment to this layer at the indefinite margin of the *discus proligerus*. By the time the ovisac is ready for rupture this layer has become very thick and vascular, and is composed entirely of large, round, and rapidly growing epithelial cells. The vascularity of the walls of the ovisac is most marked at the point of impending rupture, and its vessels are visible to the naked eye on the surface of the ovary. The rupture takes place at last, and the ovum escapes either into the peritoneal cavity, where it perishes, save in exceptional cases, or into the pavilion of the oviduct, whence it is conducted to the uterus. I believe that the ovum falls into and perishes in the peritoneal cavity in by far the greater number of cases, and that the passage of it into the uterus occurs only in a small minority of the ova produced. The vessels ruptured in the act of the escape of the ovum bleed slightly, and this hæmorrhage occupies the emptied cavity, and must, in many cases, along with the *liquor folliculi*, also pass into the peritoneal cavity. I have repeatedly seen a clot hanging from a ruptured ovisac into the cavity of the peritoneum, and on one occasion I saw the follicle rupture before I had touched the ovary, which lay exposed on a uterine tumour. Spiegelberg (loc. cit.) tells us that in women this hæmorrhage is very insignificant, as it is also in the cow. In the mare and sheep it is entirely absent, and is most marked in the sow. I have seen nothing to make me believe that in women it is ever so severe as to be pathological, but I can easily imagine that sometimes it may really be so, and may explain those rare and mysterious cases of recurrent ultra-peritoneal hæmatocele of limited extent, of which I have lately seen a most curious instance in the wife of one of my professional brethren.

After the rupture the follicle collapses, and the thickened inner coat is thrown into a series of convolutions strikingly resembling those of the brain, though I am now sure that these convolutions are indicated before the rupture occurs. I have seen them in an unruptured ovisac before puberty, but as the ovary had been pickled in chromic acid for section-cutting, they were probably produced by preparation. I have also seen them in an unripe sac opened immediately after removal of the ovary. I have twice been able to freeze and cut sections from a perfectly fresh ovary with a follicle just on the point of bursting, and I found the folds distinctly indicated.

The rent in the ovisac soon heals, and the cavity is again closed, with a small clot in its centre, and this clot was formerly accredited as the source of all the phenomena of the much-discussed *corpus luteum*. It deserves no such distinction, and it soon becomes decolourized and is absorbed, so that the points of the convolutions come into contact, ultimately coalesce, and finally form the stellate cicatrix which marks, probably for a long time the

site of the ovisac. The capillaries of the inner or yellow coat are very regular, and, in a well-injected section, resemble very much those of a villus of intestine. They spring from a small helicoid arteriole, having very thick muscular walls and two layers of fibres exactly like the arterioles of the kidney, in the outer wall of the ovisac. This arteriole breaks up at once into a ramifying meshwork, which seems to lie between the two coats of the sac, and which probably provides the vessels seen on the outer surface of the ovary at the point of rupture. From this meshwork straight wide capillaries run down in the centre of each lobe to its apex, giving off small branches to each side. At the apex of each villus or lobe (from a section it is quite impossible to say which of these words is correct, though I think *lobe* would be the proper one) comes a vein which runs down between the lobes to the point of vascular origin, and between these interlobular veins and the intralobular arteries there are universal systems of capillary communication. Along the free margins of the lobe seems to run a system of communicating canals, and this it is which causes me to regard this second system of vessels as the veins, together with the fact that I cannot make out that they have thickened muscular walls. In the absence of a successful double injection, which I have never accomplished, this interpretation of these structures may be inaccurate. Within the meshes of vessels are seen the regular round epithelial cells, so arranged as to give a general contour of convolution, and in the cavity are the altered blood-corpuscles.

The lack of greater precision in this description is to be explained by the fact that the preparation of an ovary fortunate in all respects is very difficult, and I have but seldom succeeded, and that for some years now I have been too much engaged with practice to follow up a research which requires abundant and uninterrupted leisure.

The disappearance of the red colour of the central clot is the first change observed in the contracting cavity, and with this the whole forms a yellow convoluted patch. As it contracts the yellow colour disappears, this change being effected, it is said, in about two months in the non-pregnant stage. The microscopic characters of the change consist in the disappearance of the cells, said to be brought about by fatty degeneration, though of this I have seen no evidence. This absorption is accompanied by the shrivelling of the blood-vessels and their final disappearance, so that, according to authorities who never give the slightest proof of their assertions, in eight or ten months nothing is left but a star-shaped cicatrix extending into the substance of the ovary; but this probably in time entirely disappears in a young ovary. After impregnation these changes are effected much more slowly, owing to the altered nutrition of the whole organs, so that the yellow colour may not

disappear for twelve or fourteen months (Farre), and the shrinkage of the cicatrix may take two years to be effected. It by no means follows, however, that an ovisac thus delayed in disappearance has been the seat of an ovum which has been fertilized, for I have seen three such corpora lutea in the ovary of a woman who had been confined, only seven months before my operation, of one child—her only one. Farre says that during pregnancy in such ruptured ovisac there is a special increase in the thickness of the epithelial lining, and a larger deposit of oil-granules, but I have failed to get confirmation of his statement. During pregnancy, and for some time after it, the ovaries are especially increased in size by enlargement of their vessels, and so are the contained corpora lutea. The distinguished author just quoted says: “The *true corpus luteum* is the follicle in its largest condition of growth, as it appears after impregnation; whilst in all other conditions, when it has not been stimulated to full growth by impregnation, and whether before or after rupture, it has been called a *false corpus luteum* so long as it possesses the yellow colour.” The differences are therefore only questions of degree, even on the authority of their most ardent supporters, and cease to give any special characters long before other indications of pregnancy have passed away. To elevate this structure, therefore, into a medico-legal importance is not to be justified; and after a very extensive acquaintance with ovaries I would not venture to give an opinion, from any number of corpora lutea, as to whether they indicated past pregnancy or not. The great battle on this point has been singularly barren of results, except the occasional infliction of gross injustice by the attitudes of prejudice assumed by ignorant witnesses.

At puberty a very marked change is effected in the appearance and functions of the Fallopian tube or oviduct. Before puberty the tube is small and straight, and the size of the fimbriae insignificant. When injected, its vascularity is not a very leading feature, and certainly presents a most marked difference to the peculiarly abundant blood-supply visible in its large-meshed network of capillaries in adult life. The muscular fibres of the fimbriae are also very ill-defined before puberty, and no evidence is offered by anyone that it ever makes any kind of functional movement. In adult life, as everyone knows, one or both tubes seem to approach their respective ovaries in a direction forwards and upwards, and become attached to them for a time (which I believe to be concurrent with menstruation) by cellular adhesion. Permanent adhesion, the result of perioöphoritis, is often met with in women who have had attacks of perimetritis, and a sort of permanent metrorrhagia is by no means rare as a symptom of this condition.

In the tube of a girl under the age of puberty I have been unable to find any of the ciliated epithelium which afterwards lines it.

My conclusions are, therefore, that the changes in the ovary at puberty are entirely vascular; that in the tube they are vascular, muscular, and epithelial; but that the most important change of all is the functional movement of the tube, the absence of which alone makes pregnancy before puberty impossible. Otherwise I do not believe that puberty has much to do with procreative power in women.

During the climacteric period a series of changes are effected in the sexual apparatus which make themselves felt throughout the system, but the results of which are not apparent in the structures themselves for some considerable time after the menopause. Ritchie and others have shown conclusively that the formation of true ova goes on long after this event, and I have seen in ovaries of very old women structures which I could not have decided as being in any way different from those seen in the ovaries of women at the prime of life. It is quite certain that the growth of ova persists till the end of life, though with advancing age it gets feebler, the cells become less numerous and less mature. The ovaries, however, continue to be the seat of cell-growth, and pathological cysts are formed in them sometimes even at the very extreme of old age, at a time when operative interference becomes hopeless on account of the age of the patient. The general atrophy which accompanies senility affects,

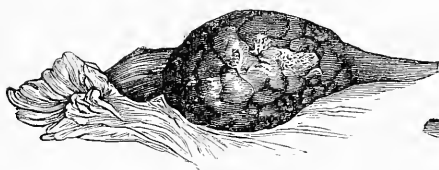


FIG. 40.—Ovary at menopause. (Arthur Farre.)



FIG. 41.—Senile ovary. (Arthur Farre.)

of course, the ovaries, and in very late life they are usually small and shrivelled, abundantly marked by scars, and having all the appearances of having been worked out. But even then they exhibit traces of all their old products, and I have seen an ovary from the body of a woman nearly seventy years of age, which it would have been impossible to say might not have been removed from the body of a woman of thirty.

The changes which are most apparent are those affected in the uterus and tubes. These structures rapidly diminish in size, and the tubes are straightened and cease their movements. Here we have further proof that ovulation and menstruation are wholly independent—that menstruation is not dependent on the ovaries or on ovulation. I think, also, that there is additional evidence in favour of the view to which I am inclined—that menstruation is largely a function of the Fallopian tubes.

The ovary, then, is simply a gland, developed as other glands, and formed of similar elements. Its peculiarity is, that its cell-nuclei have special powers during a certain time of life; and this simplification of its physiology does much to simplify its pathology.

A few sentences from Balfour, concerning the phenomena observed in the maturation and impregnation of the ovum, may be here fittingly introduced. I take them verbatim, as it is a point upon which I have made no research.

"Every ovum, as it approaches maturity, is found to be composed of (1) a protoplasmic body or vitellus, usually containing yolk-spherules in suspension; (2) of a germinal vesicle or nucleus, containing (3) one or more germinal spots or nucleoli. The germinal vesicle, at its full development, has a more or less spherical shape, and is enveloped by a distinct membrane. Its contents are for the most part fluid, but may be more or less granular. Their most characteristic component is, however, a protoplasmic network, which stretches from the germinal spot to the investing membrane; but especially concentrated around the former germinal spot is a nearly homogeneous body, with frequently one or more vacuoles, occupying one of the eccentric positions within the germinal vesicle, and it is usually rendered very conspicuous by its high refrangibility, is sometimes capable of amoeboid movements (Auerbach and Hertwig), and is more solid and more strongly tinged by colouring agents than the remaining constituents of the germinal vesicle.

"During the further maturation of the ovum the germinal vesicle moves toward the surface of the egg, its membrane becomes absorbed, and it is metamorphosed into a spindle-shaped body, this being done at the expense of the germinal spot. One end of this spindle enters a protoplasmic prominence at the surface of the egg, the spindle itself dividing then into two, one half remaining in the egg, the other in the prominence. This prominence, at the same time, becomes nearly constricted off from the egg as a polar cell, and a second polar cell is similarly formed. That part of the spindle remaining in the egg is converted into a nucleus—the female *pronucleus*—and this is moved toward the centre of the egg. On the entrance of one spermatozoon into the egg the head of the sperm is converted into another nucleus—the male *pronucleus*. Around this latter radial striæ immediately appear, and these travel toward the female pronucleus. The fusion of the two pronuclei, through the connecting striæ, form the first segmentation nucleus."

Though congenital defects of the ovaries and oviducts are of comparatively rare occurrence, yet, as might be expected in the case of a gland which performs functions so important as those of the ovary, and whose functions are of universal existence, complete absence of the gland is extremely rare. So far as I

have been able to find, there are only three preparations in this country indicating complete congenital absence of the ovaries. Of these, two exist in the cases of malformed fœtuses, in which there may be said to be an almost complete absence of the whole genital apparatus. The third occurred in the case of a girl who died at twenty, without ever having menstruated; and in that case also the whole genital apparatus was extremely defective.

I have, however, found complete absence of one or both ovaries in a number of operations. In three cases of removal of the appendages for myoma I could find only the tube and ovary on one side, and removal of these cured the patients. One such case of great interest has already been given in detail at pp. 207-8.

In another case, in which I operated for chronic suppurative peritonitis, there was complete absence of all the genital apparatus with the exception of a short cul-de-sac for a vagina:—M. M., aged seventeen, was sent to me by Dr. Willmore, of Walsall, in March, 1885, suffering from chronic peritonitis of the so-called tubercular character. I made a vaginal examination, and discovered that that cavity ended in a small aperture, and gave no trace of the uterus. The pubis was covered with hair in the ordinary way of girls of that age. On the 31st of March I opened the abdomen and found it distended with purulent, flocculent serum, of which several pints were removed, and the cavity sponged out. With my fingers in the pelvis I found the broad ligament ran from the rectum straight on to the base of the bladder without any duplicature in the least degree representing the broad ligament, and that there was no trace whatever of uterus, ovaries, or Fallopian tubes. She made an extremely satisfactory recovery, and went home on the 22nd April. Her condition is now (September, 1888) that of perfect and robust health.

I have been favoured by Dr. C. F. Darnall, of Walnut, Iowa, with a very kind letter containing the following record:—"The uterus was found prolapsed, and the right ovary as large as a hen's egg, while the fimbriated extremity of the Fallopian tube was of a black, gangrenous condition, enlarged and infiltrated. The entire broad ligament was congested up to its attachment to the uterus. The ovary was opened, and discovered to be in a state of cystic degeneration, filled with clear albuminous liquid. Search was made for the left ovary, but it was entirely missing, as was also the round ligament, ovarian ligament, and usual blood-vessels, forming the anomaly known as *uterus unicornis*. The unilateral development characteristic of this rare condition of the uterus, so far as the fundus pointing toward that side in which the ovary was present, was obliterated, being found in its highest state of perfection in the virgin; and as this woman had given birth to a child a few months before, the body of the uterus seemed not to

have yet returned to that period of involution when this feature would be especially prominent.

"The broad ligament was present, and between its folds was found the organ of Rosenmüller. As menstruation had taken place three weeks before death, the remaining ovary was further examined. A portion of it was found to be of normal tissue, full of Graafian vesicles and *corpora lutea* in various stages of development and disappearance. The latter were of different sizes, lined with the duplicature of yellow granules of fat, and in the centre of one or two were blood-clots. Surrounding them the tissue was of the natural type—not congested—and extended over upon the sides of the main cyst, showing it had sprung from one of them, and was of recent growth. Externally the walls of this cyst were of a white fibrous nature, internally of the peculiar bluish colour common to ovarian tumors. The degeneration being multilocular, several very small cysts were in the parenchyma of the ovary, adjacent to the largest cyst, all filled with brownish or straw-coloured liquids."

Like every other organ in the body, the ovary is liable to arrests of development, but from what cause or causes these arrests arise it is not very easy to say. This is a question which has not yet received sufficiently careful attention; but be the cause what it may, it is quite certain that whatever arrests the development of the ovaries equally affects the development of the whole of the genital organs. In the case of the *aves*, both ovaries and oviducts are equally developed in the embryo, but on the right side an atrophy occurs early in life which leads to a total suppression of the organs on that side, and the sexual functions are carried on by the left side only. What the explanation of this may be, and what its cause, is wholly unknown. I am not aware that any similar condition is known to be of even occasional occurrence in woman. I have found only one reference to the existence of a unilateral arrangement of mature organs, quoted by Busch from Chaussier, in the case of a woman who had borne ten children, and who, on post-mortem examination, was found to have an entire absence of the tube and ovary of the left side, and apparently an absence of the corresponding side of the uterus. When the ovaries are defective it is almost invariably the case that the other organs are equally ill-developed; but what is the order of the occurrence is not in any way clear.

I have already pointed out at some length, and I shall discuss in detail in a subsequent chapter, the effects which certain diseases of the zymotic type have upon the sexual organs—more particularly scarlet fever. As this disease is peculiarly incident to childhood, I have a very strong impression that a large number of the cases of incompletely developed sexual organs in women arise from the effects of this disease in childhood. In such cases we find that

the occurrence of menstruation is unduly protracted, or may not be apparent at all; that, at the time when the disturbance should occur, a number of vague symptoms make their appearance, sometimes trifling, at other times extremely serious. If, under these circumstances, the patient be examined, the uterus will be found to be infantile in size, antelected; and if a post-mortem examination should be made, the ovaries will be found small and somewhat puckered, the mesovarium but slightly indicated, the tubes extremely small; and should the patient have reached mature life without the occurrence of menstruation, the organs will be found to present all the appearances of those of a child between five and ten years of age.

In such extreme cases, even though the development of the whole sexual apparatus is generally imperfect, the sexual appetite is not necessarily diminished or absent, and there may be comparatively little suffering after the first few months, during which an effort seems to be made by the system to establish the change. This is provided epilepsy does not supervene, which is, however, only too common an accompaniment of arrested sexual development in women. Women who are thus affected have frequently an absence of those external peculiarities of their sex evident in roundness of form, a *prononcé* bust, smooth and hairless skin, and highly-pitched voice; and they often partake, in some slight degree, of the characters of the opposite sex, especially in the growth of straggling tufts of the hair on the upper lip and on the chin in a line with the canine and premolar teeth.

A greater number of cases have the arrest at a later stage, and in them menstruation is established, after much difficulty and suffering, between sixteen and nineteen years of age, and, though it may last with fair regularity, but deficient quantity, for four or five years, it then ceases completely. In many of these cases, however, if marriage should occur during the time menstruation is in action, and if the patient should be fortunate enough to become pregnant, a cure may result; that is, her periods will become more abundant, and her suffering less, her health will be improved, and she may go on menstruating for many years, and may even have a number of children. Even without the occurrence of pregnancy marriage often establishes the health of a woman afflicted with arrest of the development of the sexual organs.

The great bulk of cases of this kind are those which are afflicted to a less degree, but whose sufferings are nearly always sufficient to require medical assistance; and it is a singular fact that a very large percentage of the patients are found to be women of splendid physical development, who, to any but one well acquainted with such cases, look the most likely to possess capacity for procreation. In these women menstruation is established later than the normal time by a few months or a year

or two. They have, at first, irregular times and much pain, but after a while the flow is established, with normal quantity and regularity, and with but little suffering. In this way they go on for eight or ten years, and if they marry in the interval, their menstrual career may run an ordinary course. If they remain single, however, they begin to suffer from dysmenorrhœa between twenty-five and thirty, and, after about ten years' suffering, they undergo a premature climacteric change. It is also noticeable in these women that their menstrual function is suspended on slight provocation. Any chronic disease—even of an unimportant nature—any occupation which necessitates an overstrain on their system, mental anxiety, or sudden fright, will check their menstruation for months or years, or perhaps for ever. In fact, this slight excess of functional power which the ovary became possessed of at their puberty is readily and soon exhausted, and its extruded cells, on slight provocation, assume an immature form, and the systemic conditions become correlated. In fact, in such cases of amenorrhœa, and similarly to a less extent in those of dysmenorrhœa, there is a temporary resumption of the infantile condition of the sexual functions, or it may be a complete and premature assumption of their senility. The amenorrhœa of pregnancy and lactation are also partial resumptions of the infantile condition. This view has been admirably expressed by Dr. Charles Ritchie: "In early infancy, extreme old age, and long-continued organic disease, the ova are minute, transparent, and structureless; and in advanced childhood, soon after the critical age, and during pregnancy and lactation, they are more or less organized, larger, and in the latter stage are often so well matured that about one-third of the renewed pregnancies of married women take place while they nurse."

In these slighter cases of this kind of dysmenorrhœa the uterus is generally normally developed, and it is frequently so in some of the most severe cases. There is a converse condition where the uterus is infantile and the ovaries normal, much more rare and far more severe in its symptoms.

Of this condition I shall have to speak at length in another chapter, for it gives rise to great suffering in the class of domestic and artizan women, for whom no pronounced relief can be obtained save by removal of the uterine appendages.

In all such cases the general symptoms are pretty constant and distinctive. Besides the menstrual irregularities and deficiency, there is almost always a persistent, sickening, and well-marked pain, occurring in the less severe cases only at the menstrual periods, but in others being seldom absent, and always greatly increased at the periods. It originates in the ovarian region, and shoots down the thigh, often also down the leg and around to the back. There is also often present, especially on the accession of atrophy, the peculiar submammary pain of ovarian disease,

generally felt in the left side only. Headache, nausea, or even sickness, and great general discomfort, are always present more or less.

In the milder cases treatment is generally successful in mitigating the sufferings, and often the ovary may be made, even in some very well marked cases of arrested development, to fulfill its functions completely. First of all therapeutic remedies there stands iron, which will be found in such cases to be of great use, even though there should be no general indications for its employment. There can be no doubt that many forms of this remedy have a specific power over the sexual organs, male and female; for, in a case of chronic metritis or subinvolution, smart hæmorrhage may be induced by large doses of iron. In ovarian and tubal dysmenorrhœa it is best given during the intermenstrual periods in small doses, one to five drops of the liquor ferri perchloridi, well diluted, and increased suddenly to fifteen or twenty drop doses for a day or two previous to and during the menstrual flow; or, quite as good, is the substitution of an iron and aloes pill for this large dose, there being few better combinations in the pharmacopœia than that old-fashioned remedy. Hot hip-baths and leeches to the perineum at the period are often useful additions, with an occasional blister on the sacrum. To such as this, the treatment of delayed or difficult menstruation at puberty, due to inefficient development, must be confined; for the other means are only allowable in very obstinate cases, after the patient has been married, or when there are indications of premature atrophy. Marriage is, perhaps, the most efficient remedy, and one we may, under certain circumstances, recommend; for even if the patients should not have children, they will have better health, and they may even become pregnant if they marry early enough and are not mismanaged. It must, however, always be borne in mind that this is a point upon which the remedy as well as the patient should have full knowledge of the facts, and should be fully consulted.

The last and most powerful aid is mechanical irritation of the uterus, but as there is considerable risk attached to it, and therefore we require to be very careful in using it, it is not always to be recommended. It is, besides, in the class of cases where the uterus is most at fault that it is least risky and most serviceable. The method of irritation I generally employ, as the most convenient and least troublesome, is the insertion of Simpson's galvanic pessary. This instrument has by some writers been very much decried, and, I think, with justice.

The irritation set up by the presence of a galvanic stem in the uterus is communicated indirectly to the ovaries in a manner that is not as yet explicable, but that it has an influence is beyond doubt, and, if it remain within bounds, it is in a limited number of cases beneficial. A large experience has shown me

that there are many instances when the stem cannot be borne, and it is never free from risk. In a case where I have been led to regard the use of the stem as advisable, I always begin with a small size, and after this has been worn for two or three months I change it for a larger one. The action of the stem is not purely mechanical, as has been stated; for, very soon after its insertion, the zinc becomes coated with an albuminous deposit, from which the copper is free, and the zinc becomes corroded. It is certain, therefore, that there is a galvanic action set up, and the stimulating effects are due partly to this, and partly to the interior of the uterus being constantly bathed in a weak solution of chloride of zinc. However produced, it is certain that the uterus rapidly enlarges under the action, and there is every reason to believe that the ovaries take part in the increased activity. If once the uterus becomes accustomed to the presence of the galvanic stem, it may be worn for many months, and the longer it is retained the more permanent will be the benefit: but if, after a trial of a few months—say four or five—there is no apparent alteration for the better, the attempt should be given up, and the case considered as hopeless. I have had more than one painful experience to the effect that the use of galvanic stem pessaries may lead to suppuration of the Fallopian tubes, and their use requires, as I have already said, to be most carefully restricted and sedulously watched.

In a very large number of cases of incompletely developed ovaries another remnant of infantile life is met with in an exaggeration of the normal curve of the uterus, amounting sometimes to complete ante flexion, and in this class of cases the galvanic stem is especially serviceable.

The results of my attempts to arrest premature atrophy of the ovary from any cause, when once began, have been far from satisfactory: and this has been especially the case when that atrophy has been due to a constitutional disease, such as tubercle. Sir James Simpson had a belief that the pretubercular amenorrhœa, so often seen in young women, was a cause of the subsequent disease; and he therefore directed his attention to the restoration of the utero-ovarian function as a means of treatment or prevention of the consumption. From the views previously expressed, it will easily be seen that I consider his theory to be based on error, though in some cases his treatment would seem to have been successful; but how much of his success was due to local and how much to general treatment cannot now be determined. It is not, however, a practice likely to meet with many followers.

Looking back on my recollections of Sir James Simpson's practice, I believe that he must have confused, even more than we do now, many of the conditions of chronic disease in young women in all of which defective or suppressed menstruation is a leading

feature. The discrimination of the various conditions now spoken of is becoming much more clear now that these ailments are the subject of special study.

We may take it for granted as a rule that all chronic and exhaustive diseases in young women have a tendency to produce a suppression of the monthly loss, and I think it not unreasonable to believe that this arrest, or even the diminution of the loss, is a conservative measure—an effort of nature to save. We might assume, with this view, that any effort to restore menstruation was an error in policy; and that conclusion I have arrived at from empirical results.

I am consulted concerning the ailments of a very large number of young women in whom the arrest of menstruation is the leading feature, and, excluding those in which it is due to pregnancy, I find they can be ranked into three great groups. These I rank in order of the numerical frequency of the cases coming under observation.

The first is the disease to which I give the name of “adolescent anæmia” for want of a better, and because that title alone describes the condition as I find it.

I have never heard of nor have I seen the disease in boys, and therefore I regard it as peculiarly the scourge of young women. It is absolutely limited to the first ten or twelve years of menstrual life, and therefore is a disease of menstruation; though I cannot believe that the suppression of menstruation is a cause, or anything more than an incident with probably a conservative tendency. The disease is almost wholly confined to town life, though I see occasional cases from the country. It may be regarded, therefore, as a disease of civilization; but it certainly is not a disease of poverty, for the worst cases, and I believe the majority of the cases, occur in the lower middle classes, and not amongst the poor. It is not a disease of any special kind of occupation, though certain kinds of occupation—such as dressmaking or millinery—interfere greatly with the recovery of the patients; nor does it seem to be much influenced by climate or soil.*

The appearance of a sufferer from this disease is so characteristic that I have long since ceased to require any detailed examination for its detection, and I have often demonstrated to my pupils that two questions are enough to establish the diagnosis.

The patients are generally above the average of the appearance of the class to which they belong, and the delicate waxy complexion which their disease brings to them gives them, when the disease

* One of the quaintest explanations of this disease yet advanced is that recently propounded by Sir Andrew Clark who has given to it, to express his theory, the name of “feculent anæmia,” believing it to be due to poisoning by feculent retention and absorption. Women certainly are inclined to have feculent accumulations in the rectum, but this tendency in them is not limited to the age of twenty-five, and this disease is so—in my experience absolutely. I am, therefore, not disposed to discuss this theory further.

has not advanced to the stage defined by the old-fashioned term "chlorosis," a peculiar attractiveness. They are never thin and emaciated, and this is a peculiarity of all anæmic women: no matter from what cause the anæmia may arise, they always have a tendency to get fat.

When an anæmic adolescent enters the room she will generally impress the beholder as a somewhat plump and generally very good-looking girl, with a pretty pink and white complexion; so much so, indeed, is this a character of the disease as we see it in Birmingham that I call it, in jocular parlance, the "anæmia of good-looking girls." Almost the first complaint the patient will make will be concerning headache and pain after food. In very bad cases the distressing breathlessness on making any exertion will be the leading symptom, but the one question which will discover every case is that which secures an answer that the effort to run upstairs or uphill brings on hurried and difficult breathing. Further investigation discovers the facts that the menstrual periods were at first plentiful, regular, and free from pain; menstruation beginning at the usual time, and making an easy start. But after a time change comes slowly on, and now they are defective and delayed, the quality of the discharge being pale, and, as the disease advances, it slowly disappears until there is complete amenorrhœa. Accompanying this progress symptoms arise all attributable to the same cause, defective blood-supply to organs. Finally, passive œdema occurs and, very occasionally, death. But the great bulk of these cases get well under judicious treatment, and that treatment is very simple. I have watched large numbers of them through their course, and I know of no more than two who have died. Through my consulting-rooms probably more than two hundred pass every year, and for some years I kept a very careful record of all such cases, impressed with a series of beliefs concerning them which I had obtained from the schools and from books. Most of these beliefs have been dissipated, specially that which regarded most of these cases as pretubercular. They certainly are nothing of the sort. I was also imbued with the belief that there were certain cardiac murmurs which were characteristic of disordered hæmic conditions. I made elaborate observations, tabulated the results on diagrams at every examination, and came to the conclusion that there is no spot in the cardiac area and no conceivable relation to its valvular movements in which murmurs of every known character, but of truly hæmic origin, may not be heard. These murmurs vary from time to time, appear and disappear in the most incomprehensible way, and, generally, possess no kind of importance at all.

I have said that the treatment of these cases is simple—very simple and perfectly certain. They must have rest to make a rapid recovery. That is to say, if they are at school or engaged in

any employment they must be taken from it for six or twelve months, and have absolute rest. They must have small doses of iron—very small doses—combined with infusion of quassia; large doses simply blacken the stools and interfere with nutrition. Sunlight is the most important remedy of all, and every kind of contrivance should be resorted to to get the patient exposed to its influence. Change of residence from one side of a street to another, change of bedroom, and residence in the long winter sunbath of the Riviera, have all, in my experience, produced wonderful results in these distressing cases. I have long been satisfied that the relative absence of sunlight in our large towns is an abundant cause of the adolescent anæmia of women.

In these cases I have been unable to satisfy myself that the ovaries or the uterus and tubes undergo any diminution in size, for the simple reason that it is very rarely requisite, and therefore justifiable, to make any pelvic examination of these patients. That the ovaries do not lose their functions in these cases, even when there is complete arrest of menstruation, is perfectly certain from the frequency with which these patients become pregnant. They not unfrequently marry during the progress of the disease, and in such a case they certainly are not exceptionally sterile. Again, in the out-patient room I have often begun the treatment of an adolescent anæmic, to find that an additional diagnosis had to be made before the expiration of the twelvemonths to which I always bind these cases before I will undertake them. In fact, the occurrence of pregnancy in one of the anæmics is a not infrequent cause of medical trouble. A practitioner is told that a girl has not menstruated for sixteen months, and therefore he assumes that she cannot be pregnant. The story is true, but she may be pregnant four or five months all the same.

The next group in which defective or arrested menstruation is the leading feature of the cases is that in which arrested development of the organs is the immediate cause of the trouble. Either the organs never grow, or there is a premature senility put upon them by some pathological process.

In these cases the patients are well-grown young women, not anæmic, nor presenting any such appearances as are indicated in the first group, so that a first glance at them is enough to discriminate the two groups. The story is very different and the first question to be asked—at what age did menstruation begin—generally gives the clue to the case. The answer is that she saw nothing till she was seventeen or eighteen, that the periods never came on regularly, that they were of intervals of six or eight weeks, scanty, and always painful. Then about twenty they become regular. If the patient marries soon after then she may become pregnant, but if not—and sometimes whether or not—menstruation becomes irregular again about twenty-eight, and a

distinct climacteric may be passed through before she is thirty-five. The fact is that in such women the seed-time and harvest are shortened by as much, often, as fifty per cent., and for many of them the times come not at all.

Examination of such patients always shows the infantile uterus, with its foetal flexion, about which mechanical gynaecologists have written so much nonsense, and with which they have struggled so disastrously. In all the realms of medicine and surgery there has been no such quackery as that of the "anteversion pessary" and the "cervical stenosis."

The infantile uterus has been spoken of at length elsewhere, but it must be said here that with it we may have tubes and ovaries correspondingly small or disproportionately large. If the former, the sterility is certain; if the latter, the sterility may be overcome, but at a risk which ought always to be explained to the patient before she undergoes it.

Amongst women who have to labour in domestic service and in shops, this insufficient development of the genital organs is sometimes so serious in preventing them retaining their situations that we are quite justified in dealing with it by the summary remedy of removal of the uterine appendages—a question to be fully discussed in another chapter. Certainly, in these cases, therapeutic efforts are entirely futile.

The third group of cases where menstrual deficiency or arrest is the leading feature is the least common in my experience, because it is constituted by the instances of tubercle and other chronic exhaustive diseases rarely brought to the consulting-room of the gynaecologist. It is rare that the invasion of these maladies is not heralded by such significant symptoms as to lead at once to the consulting-room of the physician.

Dr. J. E. Pollock has given me some interesting information on this subject from his work on the "Elements of Prognosis in Consumption," page 293 *et seq.* He regards it as more reasonable to attribute the suppression of the catamenia to the constitutional disorder of nutrition, which is alike the cause of the suppression and of the phthisis. The earliest features of tuberculosis are arrest of development and emaciation, and the uterus only shares in the general want of functional activity undergone by all the organs. To prove that the establishment of the uterine function has a direct relation to phthisis it would be necessary to show that more females than males are affected by pulmonary consumption at the age of puberty. Out of 300 cases of strumous phthisis Dr. Pollock had 59 males and 56 females between the ages of ten and fifteen. In 59 of incipient phthisis (all ages) there were 19 males and only 4 females between the ages of fifteen and twenty. In phthisis occurring in the rheumatic diathesis between the ages of fifteen and twenty there were 19 males and 14 females. In

179 cases of acute phthisis, 26 males and 10 females were attended between the ages of fifteen and twenty. From these observations it would appear that there is a large preponderance of males over females (123 of the former to 40 of the latter). It is, then, the age and not the sex, and the general functions of growth and increased activity of the nutritive processes, to which we are to look for the exciting causes which render the period of puberty perilous. It ought to be pointed out, however, that Dr. Pollock does not give the relative number of males and females seen by himself, and the general proportion of the sexes in phthisis.

Of ninety-nine cases ten had the catamenia irregular and deficient, in fifty-eight they were absent, in four they were excessive, and in twenty-seven they had never appeared. The average duration of the class of cases in which the menstrual function was much interfered with in the course of phthysical disease was ascertained to be 21·7 months, which is a low figure. On the whole, amenorrhœa is a bad symptom, which is rarely absent in the advanced stages of the disease. The establishment of the function is often attended by relief to the tubercular disease, and its persistent regularity is a good sign; the permanent arrest is a bad sign. When menstruation is pretty regular in a phthysical patient all the symptoms are liable to undergo an increase at the monthly period. When suddenly checked, a hæmoptysis is a frequent event, and may possibly be regarded as vicarious, and with less import of pulmonary mischief than under other circumstances. In chronic cases the persistence or resumption of the function is a good prognostic. During pregnancy, phthisis, which may exist, is generally quiescent, and after confinement seems to receive an acceleration. Many very prolonged cases break up at this time. Lactation accelerates it, and the rule against it ought to be imperative.

It is certain that not only is the ovary extremely liable to be arrested in its growth from childhood to adolescence, but it is also liable to have induced upon it a condition of premature senility. It is unlike most of the glands of the body in that it has its functions, which are limited to a particular period of life, complete, and therefore it seems possible, and to be of not unfrequent occurrence, that the period of complete functional activity is very materially shortened. This, I think, we shall afterward see to be by no means unusual after first confinements, more particularly after miscarriages which occur early in sexual life; for the number of women who come under my care is large in whom the history is uniformly given of an attack of pelvic inflammation after the first pregnancy, and who have suffered from distress from that date, and have never again become pregnant. The explanation of this will be found in the adhesions formed by the tubes, to be afterward described.

Cases of premature ovarian atrophy, associated with a corresponding condition of the uterus and tubes, can also be clearly traced to the influence of zymotic diseases—a subject I have dealt with in another chapter.

The most common displacement of the ovary is dislocation downward into the retro-uterine pouch, to which the name of prolapse of the ovary has been given, as I think, somewhat improperly. I have very little doubt that a large number of women go about with marked dislocation of their ovaries downward, without any kind of suffering; and there is equally no room for doubt that this dislocation is in many cases a source of suffering so great as absolutely to prevent the woman from fulfilling her duties in life, and to render her life a prolonged misery.

The origin of this peculiar dislocation is very various. I have no doubt that, in some of the cases I have seen, the position of the ovaries in the cul-de-sac was congenital; in others the dislocation has probably arisen from some accidental strain; but in by far the largest number of cases it has been due to some accident during the process of involution of the uterus after a confinement or a miscarriage. In a large number of cases it is associated with retroversion or retroflexion of the uterus, but in others the uterus is nearly normal in direction, and then we can only assume that there has been some relaxation of the peritoneal investments of the ovaries, by which they have been allowed to drop downward and give rise to the trouble.

There can be no doubt that by far the larger number of these cases arise in a condition which is practically that of subinvolution, and in two anatomical facts we have a complete explanation of this result. Turning to Henning's table (p. 245), it will be found that the ovary of the puerperal woman is extremely large—indeed, nearly twice as large as it is at any other time. It is also extremely remarkable that the left ovary increases in the puerperal woman to a much larger extent than does the right, a circumstance which I have no doubt is fully explained by the want of a valve in the left spermatic vein (v. p. 249). As the ovaries rise in the abdomen with the pregnant uterus, their ligaments, their tubes, and everything connected with them rise in proportional degree. It is not, therefore, to be wondered at that any incident which interferes with the subinvolution of the uterus after parturition should also affect the ovary. One of the most common results of subinvolution of the uterus is retroflexion, and therefore it is that we have a large number of these cases of dislocation of the ovary downward associated with this uterine displacement; and my experience is entirely in accord with that of Professor Goodell, when he says that if we find a dislocated or, as he calls it, a "prolapsed" ovary, it is almost sure to be the left. It is therefore practically a subinvolution of the ovary with which we have to deal; and as in the uterus we have hyperæmia

of the organ gradually passing into chronic metritis, so we have a similar process occurring in the ovary, and in several remarkable cases, in which I have been obliged to remove the ovaries on account of extreme suffering, I have found the organs in a condition of chronic inflammation and greatly enlarged, associated with chronic fundal metritis and enlargement of the whole body of the uterus. In these cases intractable menorrhagia has been a leading symptom, and the monthly engorgement involved by the process of menstruation leads, of necessity, to an increase of the symptoms and an exaggeration of the pathological condition.

The history of such a case as this will generally be that of some disturbance after confinement, followed by a prolonged convalescence from childbed, a speedy resumption of menstruation, great difficulty and pain in locomotion, almost always pain on defecation, and pain during sexual intercourse. Besides these local symptoms, there will be very often a number of more or less distinct reflex symptoms, such as headache, pain in the breasts, pain in the back, and pains travelling down the thighs. The loss at the monthly periods will increase until it may amount to absolute flooding. The patient becomes anæmic, dyspeptic, and suffers from symptoms of extreme mental depression, and in course of time she will become an absolute invalid.

On examination, the uterus will be found to be markedly retroverted or retroflected, or both, the fundus usually being much enlarged, and in such a case it is very often adherent to the opposing wall of Douglas's pouch. A want of the knowledge of this fact often leads to the most disastrous results in the hands of pessary-mongers. It may happen, however, that the uterus will retain its normal direction, though it will be rarely found that it is of normal size. Great care must be taken in the examination to ascertain the position of the fundus, because it is quite possible to mistake an enlarged and dislocated ovary for a retroflected fundus, and *vice versâ*. An occluded and distended tube glued on to the back of the uterus is very often mistaken for the retroverted fundus, a mistake which may prove fatal. But the fundus may easily be recognized with a little care, by finding that the tumour felt is continuous with the cervix. The temptation may be great to replace this by means of the sound, but I would strongly urge, especially on the beginner in gynæcology, not to yield to this temptation. The sound is a most dangerous implement, and in the record of more than one of my cases it will be found that an immense increase of suffering has resulted from this practice. The experienced gynæcologist should generally be able to replace the depressed fundus by the point of his finger, and if he is unable to do this in any particular instance, he may suspect that there is some adhesion which will make it much safer not to use the sound. The leverage of the sound in such a case will exercise an amount

of force of which the operator may have no exact knowledge, and which is likely to do more harm than good. If I may here venture to sum up my experience of this instrument, extending over more than twenty years, I would say that it has done an infinite amount of mischief, that probably we should have lost nothing if it had never been invented, and that the more experience grows in practice the less will this instrument be used.

If the tumour in the cul-de-sac be found not to be the fundus, then the probability is that it is an ovary or a tube; and if it be an ovary, and not adherent, it may easily be pushed upward in the direction of its proper place, and this will generally be found to be toward the left side. If it be an ovary, the peculiar dull, sickening pain evinced by pressure will at once declare its nature; and if it cannot be easily replaced by the finger, it may be assumed that it is adherent. The conditions may be fully established by the bi-manual method of examination, and in all probability this will not be done with perfect satisfaction without the assistance of an anæsthetic, and the mixture of chloroform and ether (one to two) is by far the best agent to use. By this method of examination it should, first of all, be ascertained whether or not the ovaries are in their proper place on each side of the uterus. If they cannot be found, it is most probable that the retro-uterine tumour is made up of the appendages, and, more particularly if it be adherent, I would recommend the greatest caution in dealing with it, for I have more than once seen a smart attack of pelvic peritonitis set up by too rough handling. If the tumour be a fundus, it will probably be easily dealt with; but if it be an ovary, very great difficulty indeed may be met with in treating it satisfactorily. If the gland is not adherent, it may be replaced by a pessary adapted so as to keep it in place, or least far enough up to be out of harm's way; but if it be adherent, it may be taken as certain that no pessary can be borne. The best pessary for this purpose is one which I introduced many years ago, under the name of the "wedge pessary," and which is here figured. I have frequently had cases brought

to me in which the sufferings of the patient had been greatly increased by well-intended efforts to replace by pessary an adherent ovary.

The general treatment should consist of physiological rest, as complete as can be obtained; that is to say, that during the menstrual period the patient should be confined absolutely to bed, and that there should be a cessation of intercourse. Any

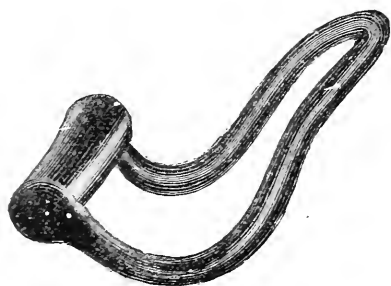


FIG. 42.—Tait's Wedge pessary.

kind of treatment which will tend to improve the patient's general health should be employed, and by far the most effectual remedy will be a judicious administration of ergot and the salts of potash. What has proved in my experience to be the best method of giving these drugs is to put the patient on a prolonged course of bromide and chlorate for alternate months, in doses of from five to twenty grains twice daily, and taken continuously; and to this is to be added a pill containing from half a grain to two grains of ergotin, to be taken for a few days before the appearance of menstruation, and during the whole of the period. I am bound to say that no other treatment by drugs has seemed to me to be of the slightest use. Professor Goodell speaks in high praise of a combination of the ammoniac and mercuric chlorides, but I have found them absolutely useless. He gives them in the following formula:—

R. Hydrargyri chloridi corrosivi..... gr. j.
 Ammonii chloridi ʒ ij.
 Mist. glycyrrhizæ co. f. ʒ vj.
 M.

S.—One dessert-spoonful after each meal, in a wine-glassful of water.

In addition to this, Professor Goodell recommends treatment by the genupectoral position, as introduced by Dr. Campbell; and in some cases of dislocated ovaries which were not adherent, accompanied by retroflexion and subinvolution of the uterus, I have found this plan to be distinctly effectual. It is, however, very harassing to the patient, for it requires prolonged use, and I have not found many women sufficiently persevering to give it an extended trial; the misfortune in these cases being, like very many others in this line of practice, that almost any treatment requires to be continued for so long a time that most sufferers are apt to lose patience, and seek other treatment at the hands of some fresh practitioner. I take the following description of this postural treatment from Professor Goodell's writings:—

“A very excellent way of keeping up the ovaries—one which in every case I adopt, and one which I shall now teach this patient—is the knee-breast posture, devised by Dr. C. F. Campbell, of Georgia. Two or three times a day, or more frequently if needful, this woman will unhook her dress, loosen her under-clothing, and kneel on her bed as she now kneels on this table. Her body is then bent forward until the breast is brought down to the surface of the bed, while her head is turned on one side and supported in the palm of her left hand. Her knees should be about ten inches apart, and her thighs perpendicular to the bed. If she now refrains from straining, and breathes naturally, a reversal of gravity will be established. With the fingers of her

free hand she will next open her vulva. Air will rush in, and the abdomen and its contents will at once sag down. This will, of course, draw up the womb and the displaced ovaries out of the pelvic canal. As it is rather awkward for a woman, while in this posture, to free one hand and reach the vulva, Dr. Campbell advises that, previously to taking this attitude, she should insert into the vagina a small glass tube, open at both ends, and long enough to project externally. This will leave an air-way, and dispense with the use of the fingers. With such tubes as I now show you I furnish each one of my patients; but you will find a good substitute in the empty barrel of the old-fashioned cylindrical 'female syringe,' as it is called. After staying in this posture for a few minutes, the woman will remove the tube and slowly turn over on her side, where she will lie as long as she can. Such constant replacements are of great service, for they lessen the throbbing, they give the limp ligaments a chance of shrinking, and they teach the ovaries good habits of staying at home."

It will, however, often happen that, after all kinds of treatment have been employed, and many practitioners consulted without the slightest improvement, or even, it may be, only with the result of increasing the patient's sufferings, she settles down as a permanent invalid, her life being rendered absolutely miserable, and she becomes hopelessly invalided by her dislocated ovary. Then there remains as her only hope the operation of removal of the appendages.

The discussion of this important subject is by no means yet complete, and it is unfortunately one in which much unnecessary and most unfair criticism has been introduced. I shall, in another chapter, consider more fully the arguments upon this question, but here it will probably be quite enough to quote again the words of Professor Goodell, with the remark that I endorse every word which he says:—

"Once in a while, however, such lasting tissue-changes take place in the ovaries as no medication can reach. The hypertrophied glands keep heavy, and refuse to float up. Now, must the unfortunate owner of these organs drag out the rest of her menstrual life burdened with the distressing ovaralgia, the crippled locomotion, and with all those aches, and pains, and throbs which I have described to you? No, indeed! The source of all this mischief—the ovaries themselves—must be removed. Nor need you fear that such an operation will unsex a woman. In the cases in which it has been performed by myself and by others it in nowise changed the voice, the appearance, or the character of the woman. It merely brought on, more abruptly than nature does, that change of life which every woman longs to reach, and which, while taking away all hope of future offspring, makes her no less a mother or a wife."

A great deal of discussion has taken place concerning the merit of having first proposed this operation, but, in justice to myself, I have to point out that, so far as the records of this operation are known, the first operation of this kind was performed by me on February 11th, 1872 (*v. postea*). Further, I have to point out that in the first edition of my book on Diseases of the Ovaries, written in 1872 and published in 1874, the essay to which was awarded the Hastings gold medal of the London meeting of the British Medical Association, the following passage occurs:—

“The ovaries are liable to certain displacements, which may give rise to many disagreeable symptoms without any actual disease of the gland. Thus, one or both ovaries may, by a relaxation of their peritoneal investments, drop into the retro-uterine cul-de-sac, and there be a source of great trouble. This will be especially the case if there be at the same time retroflexion or retroversion of the uterus; for I have known such a displacement of an ovary utterly to prevent the application of any apparatus for the replacement of the uterus, and cause so much suffering as almost to make us discuss the question of ovariectomy.”

The details of the history of this operation will be fully discussed in a special chapter.

In cases where the pelvic viscera are displaced downward so as to form more or less complete protrusion, the ovaries of course share in the dislocation, and they may incidentally increase the amount of distress caused by such a condition; but as this belongs more to diseases of the uterus, I shall not dwell further upon it; and similarly may dismiss the displacement of the ovaries involved in the inversion of the uterus. A more rare displacement of the ovary occurs as the result of an excess of embryonic transition, the gland being carried downward and forward in the direction taken by the testicles of the male in the course of descent. I have only twice been fortunate enough to have had any experience of this peculiar form of hernia. It is, however, a matter of such importance that I feel perfectly justified in quoting at length some of the more notable cases which have been placed on record. The instance which has attracted most attention is that narrated by Mr. Percival Pott, of a patient, aged twenty-three, admitted to St. Bartholomew's Hospital, who had two small swellings, one in each groin, which had been for some months so painful as to entirely prevent her following her occupation as a domestic servant. Her menstruation had been perfectly regular, and the tumours were more painful at that time. Mr. Pott found the tumours to be the ovaries, which had come down through the inguinal canal. He removed them successfully, and the patient's health and comfort were speedily and completely re-established; and menstruation never reappeared, the last observation on this point having been made several years after the operation. In the

record of the case no mention is made as to whether or not Mr. Pott removed the tubes or any part of them. In the work of L. C. Deneux many very remarkable examples of displacement of the ovary are given, such as its appearance under the crural arch, though the ischiatic notch, as part of the contents of an umbilical hernia, and of various eccentric ventral and vaginal protrusions. Dr. Busch gives seventy-eight similar observations which he has collected, including fourteen cases in which there was more or less pronounced absence of the uterus, thirteen cases of various kinds of spurious and true hermaphroditism, and four of unicornual or bicornual uterus. These observations go to show—and I think all the facts of comparative anatomy indicate it—that the male organism is an advance upon that of the female, and that these cases would have to be regarded less as arrests of development than as instances of hypererchesis in the direction of the male organs.

Kiwisch narrates an instance of an ovary forming part of a hernia through the foramen ovalé. When the ovary is displaced in these directions, it is, of course, quite as apt to undergo cystic degeneration as an ovary in its normal position; and therefore it is not surprising to find that there is at least one case on record where a cystic ovarian tumour has been removed from outside the inguinal ring. One of the most remarkable cases on record is that published by Mr. W. M. Jones, in the *British Medical Journal* for 1877, in which the patient seems to have had double congenital hernia of the ovaries, and yet became pregnant.

“A. E. C——, aged twenty-three, came to the out-patient room on August 1st, complaining of dragging pains about her abdomen and a swelling in both labia. She was married, and had one child. Ever since she could remember, when she stood up a small lump descended into each labium, going back again on lying down. She had always suffered from pains in the abdomen, and at her menstrual periods the lumps themselves were painful. On examination, a small roundish tumour was found in each labium, feeling like a testicle, and quite easily returnable into the abdomen through the inguinal canal. It was perfectly dull on percussion, and there was no impulse on coughing. Double ovarian hernia was at once diagnosed, and the diagnosis was confirmed on her coming the following week, during her catamenial period, with both tumours swollen and tender. An ordinary double inguinal truss was given her, which effectually prevented the descent of the tumours, and she reported herself last week as being quite well, and entirely free from her abdominal pains. The great interest in this case lies in its analogy to the descent of the testicle in the male, and in the fact that, notwithstanding the malposition of both ovaries, she had actually been impregnated, and given birth to a living child.”

Dr. Werth, of Kiel, narrates an instance of removal of both ovaries on account of double ovarian inguinal hernia. The patient was twenty-three years of age, and had never menstruated, but at each monthly period there was severe abdominal pain. The vagina was occluded, the clitoris was unusually large, and was furnished with a large prepuce; and under the skin, over the inguinal canal on each side, was a body about the size of a pigeon's egg, resembling a testicle in shape and consistence. These bodies lay symmetrically in the axis of the inguinal canal, the upper end corresponding to the inguinal ring, while the lower and inner end corresponded to the anterior margin of the labium majus. At the upper part of each body was an ill-defined substance of the size, form, and consistence of an epididymis. They were both quite irreducible, and looked so very like testicles that the sex of the patient was extremely doubtful. An operation was undertaken for their removal, which was completely successful, and on subsequent examination they proved to be unquestionable ovaries, for they possessed the characteristic follicles containing ova.

Weinlechner (*Wiener Med. Wochenschrift*, 1887) relates a case of inguinal hernia produced by a stumble, and for which a truss had been worn for eighteen weeks, when it came down again and became irreducible. This was followed by vomiting and acute pain. As taxis failed, and the symptoms of incarceration became more severe, she was admitted into hospital. In the right groin was a tumour the size of a goose-egg, which was marked into two divisions by Poupart's ligament. The symptoms of incarceration were not quite perfect, and the patient asserted that the hernial tumour increased at the menstrual periods; so that the probability of an ovarian hernia was recognised, and it was confirmed by operation. The swollen and irreducible ovary was removed after ligation of its pedicle, and the patient recovered well.

Dr. J. H. Balleray has written an extremely interesting paper upon a case of this kind, to which he appends some valuable references, and I therefore here insert the whole of his observations.

"The hernial tumour was large, and seemed to be divided into two portions by a sulcus; the skin covering it was somewhat inflamed and tender to the touch. There was something very peculiar about the feel of the tumour, especially at its lower portion. The sensation communicated to the finger was such as to satisfy me at once that I had to deal with something out of the usual order of things, but as to what the real character of the hernial tumour was I had no definite idea. I therefore requested my friend Dr. E. J. Marsh to see the case with me. He did so, and seemed to be as much puzzled as I was. He suggested, however, the possibility of the ovary having found its way into the hernial sac. Taxis having failed to effect reduction of the hernia, and the patient's condition being critical, both Dr. Marsh and myself were convinced

that an operation was imperative, and that it should be performed without delay.

"Having informed the patient's husband of the result of our deliberations, he requested that we should proceed with the operation at once, if in our judgment it was necessary. Accordingly, with the kind assistance of Drs. Marsh and Rogers, I proceeded to operate. Having cut down to the sac, this was cautiously opened, and about four ounces of brownish-yellow fluid escaped, when, to my surprise, there was neither intestine nor omentum to be seen, but the left ovary was found lying near the lower portion of the sac, and tightly strangulated by a firm fibrous band, which extended from one wall of the sac to the other, and constricted the ovary at about its upper third. This band was divided, and the ovary liberated. It was found to be very deeply congested, but as its vitality did not seem to be destroyed, I decided, after consultation with my *confrères*, to return it into the abdominal cavity. The wound was then closed in the usual way, a pad and bandage applied, and the patient put to bed.

"She rallied well from the operation, and at the end of the third week she was convalescent. The enterocele returned, however, after she began to walk about, and she has, therefore, been obliged to wear a well-adjusted truss, which enables her to attend to her household duties with a greater degree of comfort than she had enjoyed for years before.

"In January, 1864, Mr. Holmes Coote reported, at a meeting of the Royal Medical and Chirurgical Society, a 'case in which the left ovary was found in the sac of an oblique inguinal hernia.' A young woman was brought into St. Bartholomew's Hospital with a swelling in the left groin, and suffering from the symptoms of strangulated hernia. In the course of a few hours the usual operation was performed, when the ovary and Fallopian tube were found in the sac. The left ovary was removed, some thickened omentum cut away, and the patient was put to bed; but the sickness and constipation continued, and she died four days after the operation. The cause of the sickness, etc., was displacement of the stomach and transverse arch of the colon. In the discussion which followed the report of this case, Mr. Caesar Hawkins stated that he had met with two cases in which the ovary was found in the hernial sac. In one of these the patient was an elderly woman, and died of peritonitis. In these cases he thought the better practice was to leave the ovary in the sac, as its removal was attended with danger.

"Dr. Frank H. Hamilton, of New York, assisted by Dr. Terry, collected reports of twelve cases of ovarian hernia occurring in the inguinal region, most of which were operated upon before a diagnosis was made. These cases were published in the 'Bellevue Hospital Reports,' 1870, p. 159. Dr. Hamilton himself has seen

one example of congenital ovarian inguinal hernia. The late Dr. J. C. Nott met with a case of ovarian hernia at the inguinal ring, in a lady sixty years of age, which, being strangulated, he was able to reduce by taxis. A very interesting case is also reported by Dr. Alfred Meadows, in the 'Transactions of the Obstetrical Society of London,' vol. iii., p. 438.

"In cases of strangulated ovary, the question as to whether the ovary should, after division of the stricture, be returned into the abdominal cavity or left in the hernial sac, ought, in my judgment to be determined by the condition of the organ itself. The rule by which the surgeon is governed in the management of strangulated intestine or omentum is, I think, applicable to these cases.

"According to Hamilton ('Principles and Practice of Surgery'), Neboux, Mulwert, and Krieger returned the ovary into the abdomen, and their patients got well. Deneux, on the other hand, cut away the ovary, and the patient was well in twenty-nine days. Bérard found both the ovary and Fallopian tube in a sac, which he supposed to be a serous cyst. Having opened it, suppuration ensued and the patient died.

"The method of dealing with the ovary adopted in my own case was, I think, justified by the result, and in similar cases I would recommend similar treatment. But in cases in which, from long continuance of the strangulation, or excessive tightness of the stricture, the tissues of the ovary either are or are likely to become gangrenous, removal of the organ is, in my opinion, the proper course to pursue."

One of the most remarkable cases of ovarian hernia is the following, narrated by Dr Leopold, in which the left cornu of the uterus was included in the protrusion, and removed with its corresponding ovary.

A woman, aged twenty-eight, the issue of parents who had had seventeen children well formed, experienced for the first time, at the age of fourteen, the menstrual molimen. This molimen reappeared regularly every twenty-six or twenty-eight days, but was not followed by any loss. It was accompanied with pains which were localized in the left inguinal region, lasting several days. In process of time the patient remarked that, from the first day of the molimen, a body of the size of a plum rose in the left groin, and that this body became larger every day, and only resumed its former volume several days after the period. At length there resulted from it an excessive irritability and a grave alteration of the nervous system. Married at twenty, she, with the advice of her husband, had recourse to a gynæcologist, who, finding the vagina absent, endeavoured, by incision and dilatation with tents, to form a passage to the uterus, in order to remedy a supposed retention of the menstrual blood. The treatment was fortunately interrupted, but there occurred afterward, and

especially in 1877, vicarious hæmorrhages from the nose and lungs.

In March, 1878, she placed herself under the care of Dr. Leopold, who, after having treated her for more than twelve months, published this remarkable observation:—

“The breasts, pelvis, and vulva were well conformed, but the vagina terminated in a cul-de-sac three centimetres in depth. In this place there was no indication of a vaginal portion, and above there was no trace of either uterus or ovaries.

“In the left groin, on a level with the external inguinal ring, was perceived an uneven tumour of about the size of half a hen’s egg, painful, hardly movable, almost on a parallel in its great axis with the inguinal fold, and resembling an ovary abnormally situated. On the right side the inguinal region was normal; but on deep pressure a small body was felt, resembling that met with on the left side, but more movable, less painful, and much smaller.

“The pain caused by the tumour on the left side became at length so acute that an operation was performed on February 15, 1879. The tumour was removed. It was not, as had been diagnosed, *an ovary*, but a *rudimentary uterine cornu*. At the same time the neighbouring tube and ovary were removed. After the abdominal cavity had been thoroughly cleansed, and the ligatures cut short, the T-shaped wound was closed by five deep sutures of silver wire, including the peritoneum, and by several superficial sutures of silk thread, and at the point of union of the two incisions a small drainage-tube was introduced to a depth of about one centimetre.

“No fever followed, and fourteen days afterward the wound had perfectly healed. The time of the menstrual epoch passed without the least trouble, only that there were some contractions in the muscles of the left leg.

“The amputated cornu uteri, of the size of the thumb, presented the histological structure of the uterus; that is, smooth fibres, connective tissue, vessels, and glands. The ovary presented all the characteristics of normal structure, with yellow bodies and vesicles at various stages of development. The tube has a pavilion beautifully fringed, but there was no canal continuous with the infundibulum.”

Dr. Alfred Meadows has also placed upon record, in the “Transactions of the Obstetrical Society” (vol. ii.), a case in which he removed a hernial ovary.

I have also met with a very singular case of ovarian displacement, where the condition was evidently congenital, and was discovered only when an operation had to be performed for the removal of the misplaced ovary on account of cystic degeneration. The tumour was of very large size, and for its removal the usual median incision was made between the umbilicus and the pubes.

No difficulty was encountered until I attempted to drag the upper part down through the incision, when I found a broad band of union extending upward from the umbilicus. The peritoneum passed from the abdominal walls on to the tumour, just as it does on to the rectum, and the union was evidently not merely inflammatory adhesion. On dividing the peritoneum, I found that the common tendon formed part of the cyst wall, and that the fibres of the rectus abdominis muscle were inserted into the cyst. The round ligament of the liver ran through the cyst wall to the umbilicus, and, on being cut through, the umbilical vein contained in it bled profusely, and had to be tied. Very careful dissection had to be made to remove the cyst, and when it was completed it was found that a large triangular gap was left in the abdominal wall, covered only by skin, and having its base at the umbilicus and its apex at the xiphoid cartilage. This gap was closed by subcutaneous stitches of silver wire, and the patient made a complete recovery, and has since been safely confined of a living child. Careful examination of the tumour satisfied me that the only explanation which could possibly be offered of these unusual conditions was that the ovary had become attached to the cleft in the visceral arches during early embryonic life, and had subsequently been affected by cystic degeneration.

Klob has described a twisting of the ovary on its axis, which is probably congenital, and has not yet been found to be of any pathological importance in an otherwise healthy ovary. In the cystic ovary a similar twisting has been observed to a more complete extent, and with disastrous results, as will afterward be described. The ovary is said sometimes to be completely detached from its normal position and relations, and forms new attachments elsewhere. This occurs with the healthy ovary, and after it has undergone cystic degeneration. I am now in a position to give a complete account of the whole of this curious process, having seen it in all its stages in a series of about forty cases of axial rotation of ovarian tumours, the details of which will be found in a subsequent chapter.

In some rare instances we find the peritoneal layers so deficient that the ordinary mesenteries and ligamentous folds are completely absent. I have described several cases of congenital defects of the peritoneum (*Dublin Quarterly Journal of Medical Science* for February, 1869), but the most interesting I have met with is one I published in the *Obstetrical Journal* for October, 1876. There the peritoneal sac was wholly absent, the intestines being connected together by an abundance of extremely loose cellular tissue. In the pelvis it was absolutely impossible, on post-mortem examination, to identify any organ but the uterus, from the entire absence of any of the usual peritoneal limitations. Thus, the bladder was torn open in removing the uterus, under the impression that it was

some of the loose areolar tissue, and its nature was recognized only by the escape of urine. Two masses close to the uterus, one on either side, when cleared of the abundant connective tissue and laid open, proved to be the ovaries, and in the left there was the clot of a recent Graafian follicle, the ovum of which, if it ever were extruded, must have been arrested in the surrounding tissue. Over the right ovary the Fallopian tube seemed to course in a normal direction, but it became lost in a mass of connective tissue, and I could find no appearance of the fimbriated expansion. On the left side there was an appearance of a rudimentary tube in a fold of tissue.

The menstrual history of the patient, as ascertained by my friend Dr. Hickinbotham, in consultation with whom I saw the patient during her life, was in no way abnormal, and she was twenty-five years of age. The cause of her death was the obstruction of scybalous masses in a bunch of coils of intestine, along which they could not pass, apparently because the intestines were unable to move about.

VII.

THE FALLOPIAN TUBE AND MENSTRUATION.

It is now necessary to speak at greater length of the oviduct, or Fallopian tube, in order to understand and duly appreciate the immense change which has been wrought in our views of pelvic physiology and pathology by a more careful consideration of the anatomy, physiology, and, above all, the diseases of this most important structure.

The human oviduct is a very simple structure, but a very peculiar one, for very many reasons. Thus it is the unique example of the junction of a serous and a mucous surface, the external coating of the infundibulum being serous and the internal mucous, and they unite at the margins of the fringes. The development of the tube is also singular, and its relations to the uterus vary enormously in different animals. Thus, in birds the Fallopian tube is represented only by an aperture, for what is usually called the oviduct in birds is truly the uterus. In rodents, where there is a wholly bifid uterus, the true tube is extremely short. In some of the lower mammals it is also very short, and it becomes pronounced only as the uterus becomes single, and the production of young at a birth gets remarkably reduced in number. It would almost seem as if the arrangement of the procreative machinery, by the introduction of the transverse tubes and single uterus, was modified to diminish the number of fertilized ova. Certainly one of the extraordinary delusions into which physiologists have been led by observations on animals is in the mistaken belief still prevailing about the Fallopian tube. An animal has been killed, shortly after copulation, at the œstrus, and a number of fertilized ova have been found in what appeared to be the Fallopian tubes (Bischoff, Schleiden and Schwann, v. Baer, &c.), and the supposed tubes have been found crowded with spermatozoa. But then it was not the tubes, but the ends of the bifid uterus which were mistaken for the tubes, in which these things were found. Von Baer and others have on such observations founded three extraordinary delusions concerning the physiology of the human generative process, which have been almost universally adopted, but which must all be discarded before we can get a reasonable notion of its pathology. These are—(1) that the œstrus or rut of animals is the homologue of human menstruation, (2) that ovulation occurs once a month and is the cause of menstruation, and (3) that the access of the spermatozoa to the ovum takes place in the Fallopian tube. These three fallacies may with advantage be briefly dealt with here.

In the majority of fishes the eggs are extruded ripe from the female in enormous numbers into the water, and are fertilized by the male shedding his spermatozoa over them, so that myriads are fertilized in excess of the number which survive as adult fish. No kind of conjugation takes place between male and female until we come to the batrachians. There the male (common frog) buckles himself round his partner, the ripe ova are extruded and the milt passes over them as they come out. Still there is no real intromission, and the number of eggs, infinitely less than in the case of fish, is still greatly in excess of that which comes to maturity. In birds there is a kind of intromission, for the sperm is squirted into a long uterus and reaches quite up to the ovary, so that each ovum is fertilized almost as it leaves the ovary (if the proportion of hens to the cock is not excessive); and again the number of eggs which come to maturity is greatly increased in proportion to those which do not. The custom of watching and rearing the young and the fact of a warm blood circulation are coincidently and concurrently introduced in this phase of evolution—most significant facts. It is quite clear, however, that all these conditions exist in germ form in earlier phases.

As we run up the scale we find that special organs are developed for systematic intromission; the uterus becomes single whilst the appendages remain double, and the discharge of ova and the period of congress become periodic and concurrent. The periods and the concurrence are governed by the special requirements of the lives of the animals, as is shown most perfectly in the case of the deer.

The great phases of development which land us at man have yet to be traced in the quadrumana, and though the story is quite complete in the regions of anatomy, in most others it is a blank sheet. Especially so is it in their sexual history. We know that in confinement the higher apes have something like a menstrual flow, but we also know that this is not the period to which congress is limited. Whether this appearance of menstruation occurs in them in their wild state we do not know. But we do know that menstruation is just the period when women will not permit congress, unless improperly forced to it, and therefore it cannot be regarded as their period of rut. Besides, they give not the slightest evidence, by the swelling of the genitals and the signs always present in animals at the œstrus, that the monthly phenomenon to which they are subject has any character in common with the animal rut. In some rodents, for instance, the period is marked by an extraordinary anatomical change in the opening up of the cloaca, which at all other times is hermetically closed.

In examining animals whose traditional life history has produced the habit of an annual œstrus, such as the deer, it is perfectly easy to ascertain that ovulation is not confined to that

period, but that ripe ova are being cast off at other times. Ovulation, therefore, does not cause the oestrus, which has arisen out of the necessity of the life of the animal, as deer and many kinds of sheep could not rear their young in countries where snow lies, if the young were born in advance of the winter months. In their natural condition deer and sheep produce single young ones; that is all that their winter stock of fat could nourish till the grass is in full growth. But breeds of sheep have been artificially produced, nearly every member of which will produce twin lambs, and often triplets, and these flourish on lowland pastures. In highland districts of this and other countries, where the snow may lie till the end of April, these breeds would die out. Even in the best pasture-lands, on the contrary, animals whose young are of large size, and animals which cannot put on huge coatings of fat (if they have to be fast runners), never or very rarely produce twins. Such a case is the horse. The mare has the oestrus at long intervals, and carries her young a long time. But she is never so ready for the stallion and never so effectually engages in congress as soon, almost immediately, after confinement. Yet I have satisfied myself that ovulation is always steadily in progress in the mare.

All these, and many other illustrations to be culled from the book of nature, show that ovulation may be wholly concurrent with oestrus, as in the bird, or that it may have nothing to do with it save being part and parcel of the same process of generation. Facts also exist which show that the whole range of incidents may be altered in individual instances, a most curious illustration of which is to be found in the common octopus.

So far as is known, the cephalopods in a state of nature shed their eggs like the fish, the male passing his sperm over them after they have left the female. But if male and female squids are kept in small tanks in confinement the males seize the females in a kind of congress, and this sort of embrace becomes uniformly fatal. Doubtless some kind of intromission is effected, as in birds, for the eggs are fertilized in the abdominal cavity of the female; they are not shed—the poor mother is burst open by their growth, the victim to a sort of ruptured tubal pregnancy. These facts were given me by the custodian of an aquarium in which cephalopods have been kept for years, and he gave me the facts without the explanation, which I discovered for myself, that the rupturing eggs had been fertilized within the mother.

All this goes to show that what is true in one animal need not be true in another, and that the assertions that the animal rut is the human menstruation, and that both are dependent on ovulation, are mere blind assertions which require very strict investigation. For if fully ripe and ripening ova, together with evidence of ova recently shed, are to be found in sheep in the middle of May, in

a breed in which the œstrus does not occur till well on in September or even October, it is nonsense to say that ovulation is the cause of the œstrus. The evidence shows that ovulation is continuous, but that no advantage can be taken of it till the occurrence of the œstrus, in order that the young may not be brought forth in undue numbers, and at inappropriate seasons. The œstrus is the regulator of ovulation, and not its product. Ovulation is not the cause of the œstrus, but the œstrus is the means by which, in the preparation of the uterus, of the oviduct and genital passages, the ovum ripe at the time may become fertilized, and grow into a foetus. Ova which are matured and shed at times other than the period of rut, are dropped into the cavity of the peritoneum and die.

If I did not think I should trespass too long on the patience of my readers I would trace the corresponding changes in the males of various animals, showing how completely the sexual machinery has to yield to the traditional habits of the necessity of each animal's struggle for existence; and how, therefore, sexual habits may and do differ absolutely in different animals, and in different breeds of the same animal, especially when influenced by artificial selection in domestication. Thus, the life of a stag or a ram for a whole year has to be spent in preparation and in struggle for a sexual indulgence of a few minutes, within the period of a few days, and immediately after that the sexual apparatus undergoes atrophy. In some animals (and in an enormous number of plants) the sexual apparatus is used once and the creature dies. It is, therefore, on *à priori* grounds, a pure assumption to say that two phenomena like rut and menstruation are the same thing, merely because a bloody discharge is a feature of both.

I have indicated one fact already: that the œstrus is the only time when the female of some animals will receive the male, and that menstruation is the only time when women refuse, as sufficient of itself alone to show that the two phenomena are entirely different. But there is another fact as significant: that a healthy female animal receiving the male at the œstrus becomes pregnant almost inevitably—I am not now talking of animals in domestication, though it is mostly true with them—whilst women probably receive their husbands fifty or a hundred times for once they conceive. If the œstrus and menstruation had much in common, every woman would conceive from the first congress after the first resumption of menstruation after each confinement. In fact, if the ovular theory of menstruation were a fact every woman whose sexual machinery was perfect, and who was living with a healthy husband, would inevitably have a child every eighteen or twenty months; and I am sure womankind are grateful that matters are no worse in this respect than they are. Families would average fifteen or sixteen instead of 4·5, as they do.

The fact is that hitherto we have been discussing these questions (and thousands of others) not only with a very incomplete knowledge of the facts, but without the possession of the keys of the cypher. One of the main clues has been given us by Charles Darwin, and now that we know that there is an endless process of change and development in progress, we must apply its conclusion to man and all his surroundings, to his pathology as well as his physiology.* The introduction of civilization (a wide, and as yet badly distributed term, but of most convenient use) has effected great changes for human life, and amongst them new diseases and new physiological processes. Menstruation is one of these new processes, for we cannot separate man from his neighbours, and we see something like the beginning of this peculiar phenomenon in the higher apes *in confinement*; though, if Mr. Bland Sutton's observations have to be taken into consideration, it is very doubtful indeed as to whether what is considered menstruation in the higher apes is not æstrus. Thus he says:—"In macaques menstruation is accompanied by certain unmistakable objective phenomena other than the escape of blood from the uterus, for all the naked or pale-coloured parts of the body, such as the face, neck, ischial regions, etc., become of a lively pink colour; in some cases it is a vivid red. The amount of sanguineous fluid discharged from the uterus is very small and soon ceases, but the co-incident colouration of the pale parts continues for several days. In warm weather during menstruation the labia and soft parts in the immediate vicinity become swollen, as though they were composed of erectile tissue. The baboons present similar objective signs to the macaques, but in exaggerated degree, so that a menstruating baboon is anything but a comely individual; indeed, at times its appearance is so disgusting that in the Zoological Gardens it is necessary to remove the animal from the cages to rooms not accessible to ordinary visitors." It will be seen that this is exactly the same thing as is observed in a hen that is laying. In her the objective phenomena chiefly consists in the turgescence of her comb, by which she attracts at once the attention of the cock and of the henwife, so that the skilled eye of the poultry-keeper can tell at once by looking over the flock the hens who are engaged in laying and those who are not. There can be no question that the turgescence of these organs, alike in apes and in hens, are for the purpose of attracting the attention of the male at the time when the ova

* An extraordinary example of the evil influence of domestication in animals is seen in the development of lechery in the bitch. It is well known that in the wild state animals of the dog tribe are monogamous, and that at rut the female will receive only one male, and that for her selection very fierce conflicts are generally undertaken amongst the males, the victor in the fight obtaining the prize. But in domestic life the bitch, when in heat, will often take six or eight dogs one after another, and will go about soliciting—a veritable canine prostitute. The males, on the other hand, have largely given up the habit of fighting under such circumstances, and may be seen more or less impatiently waiting their turns.

are ready for fertilization. This is an altogether different thing from menstruation in the human being, because whilst ovulation in the lower animals occurs at this time, and the nidation and the ovulation are in them absolutely concurrent, it is not so in the human being, the difference between them being that whilst menstruation is periodic, and ovulation probably so, they are not concurrent, and there is, as far as we know, in the human being nothing approaching to the œstrus of the lower animals.*

In the lower races of men—those living in a condition of near approach to the apes—menstruation is hardly more visible than among the apes. The scanty evidence available on this point is, however, quite enough to determine as a fact that menstruation increases in pronouncement with civilization. A curious collateral proof of this exists in the negro race, who have within a very few generations been advanced from the lowest form of life, with all its advantages (or disadvantages so far as the special diseases of women are concerned), to the full possession of a civilised form of it, in the United States. They suffer horribly from myoma—a purely menstrual disease—and ovarian tumours are hardly known amongst them. But myomata are unknown amongst the cousins of these women in Africa. Here, then, is a large pathological change effected within a century by some result of civilization—certainly not climatic. What the immediate process is we cannot say, but with such a convincing fact it is impossible to leave evolution out of count in a pathological research, and the steps between physiological conditions and those of disease are quite invisible.

The facts of menstruation, to be discussed later on, tend to show that it is almost of itself a morbid process.

The second fallacy with which I have now to deal is that “ovulation in women occurs once a month, and is the cause of menstruation.” Reeves Jackson, of Chicago, has been one of the best writers in endeavouring to expose the fallacy of this assumption of the ovular theory of menstruation, and his paper in the American *Journal of Obstetrics* for October, 1876, has most certainly not received the attention it merits. The greatest

* On this point Johnstone has a very remarkable passage, worth much consideration. (Transactions British Gynæcological Society, 1887, p. 389.) “In woman, however, where the rut may be said to be sempiternal, the endometrium must be kept in a condition ready to take up and nourish the ovum at a moment's notice; as her placenta is by far the most complicated of all her organs, her preparation for its manufacture must be the most elaborate of all. And, as has been shown in my former paper, the erect position will not permit the use of lymphatic vessels in the construction of the uterus. The consequence is the maternal organ cannot be absorbed, but is thrown off with the fetal envelopes, and passed out through the vagina. Ercolani has proved that in the other upright animals, such as monkeys, apes, and the like, the same conditions exist. The two great conclusions that I would draw from this work are, first, that the preparation of the endometrium for the reception of the ovum is of as much importance in that group of phenomena known as the rut, as is the escape of the ova from the Graafian follicles and their procession into the uterine cavity; and, secondly, that the one plane on which all the various phases of the mammalian endometrial development depend is the medullary state through which they must all pass before the placenta can be formed.

observer of the phenomena of ovulation which this country has produced—Charles Ritchie, of Glasgow, might as well never have written his papers (*London Medical Gazette*, 1843), so little impression have they made. Reeves Jackson formulates certain essential propositions as belonging to the ovular theory of menstruation, and it may be well to consider them in turn.

The first is, that “at regular periods of about twenty-eight days, in the human female, a matured ovule is discharged from the ovary, passes into the Fallopian tube, and is transmitted to the uterus.” This idea of menstrual ovulation is due to an assertion to its effect by Jean Theodore Kerckring in his *Spicelegia* (1670-3), and is entirely unsupported by any proofs to this day. The first fact placed on record, which shows its inaccuracy, was published by Francois Marie Nigrisoli in his “*Considerazione intorno alla generazione de viventi*” (Ferrara, 1712). He accurately describes the follicles of de Graaf in young girls, long before menstruation had occurred, and his observations have been amply confirmed and fully extended by numerous observers ever since. Reeves Jackson gives the date (1827) of the discovery of the true ovule by von Baer as the real birth of the ovulation theory, but it is clear that it was held by most writers of the eighteenth century, without any discrimination between the follicles of de Graaf and the ovule of von Baer. Indeed, such discrimination was unnecessary, for as women from time immemorial had reckoned their pregnancies from the last day of the last menstruation, the conclusion that every menstruation was an ovulation was natural enough; and the converse assertion that the monthly ovulation must be the cause of the periodic discharge was accepted without question—as it is to this day in every text-book, so far as I know, without exception. Yet neither statement is true.

The first argument against both of these assumptions is that of Ritchie (“*Contribution to the Physiology of the Human Ovary*,” *London Medical Gazette*, 1843), to which not the slightest tenable objection has ever yet been offered. On the contrary, it has uniformly been confirmed. “The ovaries of new-born infants and children are occupied, sometimes numerous, by Graafian vesicles or ovisacs, which are highly vascular as early as the sixth year, and vary in size from the bulk of a coriander seed to that of a small raisin in the fourteenth year, at which time, also, they are filled with their usual transparent granular fluid; their contained ova can be detected, and their coats are so elastic that their contents, on their rupture, may be projected to at least twelve inches; the existence of menstruation not being essential, therefore, to these conditions, either as a cause of them or as an effect, and the possibility even at this age, should rupture of the follicles occur, of their contained ova being conveyed to the uterus along the Fallopian tubes, kept patent by their peculiar secretion, will be

admitted. The Graafian vesicles contained in the ovaries prior to menstruation are found, as they also are in every other period of life, in continual progression towards the circumference of the glands, which they penetrate, discharging themselves by circular-shaped capillary-sized pores or openings in the peritoneal coat; the presence of the catamenia being thus no indispensable requisite to their rupture.

“The establishment of menstruation does not necessarily give rise to any immediate modification in the manner in which the ovisacs are discharged, or in the subsequent changes which these bodies undergo; but in some cases the conditions which obtain in the period before puberty are extended for a time into that of menstruation.

“The ovisacs of the human female do not require the establishment or presence of menstruation for their development or rupture. Vesicles of adult size may exist and be discharged about the age of puberty, as also at other periods of life, independently of menstruation; and this state may be present in its normal form for at least eight consecutive periods, without a vesicle being ruptured, unless after the manner and with the phenomena which occur in childhood.”

Reeves Jackson further supplies an argument which is irresistible, and upon which the experience of all ovariologists is concurrent. “In many cases in which both ovaries have been found so thoroughly diseased as to preclude the idea that they could possibly have performed their function of ovulation normally, if at all, the regularity of menstruation has suffered no interruption.” To this I may add that in a pretty large proportion of cases (probably thirty per cent.) in which both ovaries are thoroughly removed, but where the uterus and tubes are untouched, menstruation goes on undisturbed. Not only so, but removal of the ovaries alone sometimes has not only failed to arrest menstruation, but an increase of menstruation has followed it. Several examples of this have come under my own notice, and the following remarkable instance has been communicated to me by Dr. Reeves Jackson:—“A single woman, twenty-one years of age, had begun to menstruate at fifteen, the flow occurring regularly from the first, but always accompanied by the most excruciating pain, which could only be partially controlled by large doses of morphia and chloroform inhalations. She had been under the care of a number of physicians, and all the usual methods of treatment of dysmenorrhœa, medical and surgical, were tried without avail. On March 12th, 1882, both ovaries were removed, but menstruation reappeared, and has continued to do so with entire regularity ever since, every twenty-eight or twenty-nine days. The amount of discharge has *greatly increased*, and is accompanied by all the former intense suffering; indeed, so much blood is now lost at each

period that the patient has become quite anæmic, and scarcely rallies during the intervals. I am now endeavouring (1883) to have the patient's consent to the removal of the tubes."

Further, as will be seen when I speak of diseased tubes and ovaries, chronic ovaritis and suppuration of the ovary exercises no perceptible influence on menstruation at all. Inflammation or other disease of the uterus or of the Fallopian tubes, on the contrary, always makes it abnormally frequent and abnormally profuse. Reeves Jackson also points out that the cases of hernial ovaries removed have disproved the ovular theory, for after their removal they have been uniformly found so damaged as to be incapable of ovulation. This has been the case with two specimens I have removed by operation from the groin: neither presented at any point the slightest trace of normal ovarian tissue. Both tumours had increased in size at each menstrual period, and had become tender, but the Fallopian tubes were present in the hernial sacs of both cases, and the pain was distinctly premenstrual, as pointed out in another case by the late Dr. Meadows; and this is the characteristic phenomenon of tubal trouble.

The negative evidence concerning the want of concurrence between ovulation and menstruation is very strong, and in such a case negation is quite equivalent to strong proof; for if ovulation is the cause of menstruation, at each period there must be a follicle ripe for discharge. But quite the contrary is the fact. For every body of a mature woman examined in which death took place during the menstrual week, and in which a ripe ovum was found, there have been at least four in which no such appearance was observed. Thus Dr. John Williams, who has written many elaborate but inconclusive papers on menstruation, who has even gone so far as to formulate a theory wholly irreconcilable with his own facts, tells us (*Obstetrical Journal*, Vol. III.), that in six cases there were only two in which a ruptured Graafian follicle *even seemed* to correspond with a menstrual period, and in two others the follicles most advanced were so immature that he thought they would only probably ripen by the next period. This is, of course, an assumption that we know the time it takes for a follicle to ripen, when the fact is that we have not the faintest evidence on this question. We know not whether it requires hours, days, weeks, months, or years. If a follicle ripened and the ovum was shed every month we should have in every healthy woman a series in progress, just as we see in the ovary and oviduct of a laying hen; but we have never seen anything of the kind. Paget and many other writers give evidence of having examined the bodies of women dying during menstruation, and that they have found nothing like a ripe or burst ovum.

Again, numerous cases are on record where women have become repeatedly pregnant without ever menstruating, and there are

diseases—notably phthisis and adolescent anæmia—which arrest menstruation, but which do not prevent the patients becoming pregnant. De Sinety has drawn especial attention to this, so also has Dr. Julius Pollock. The evidence obtained from modern operative proceedings also yields proof, which seems to me incontestible, that ovulation and menstruation are not concurrent, and, therefore, that the former cannot be the cause of the latter. In a paper which I published in the *Medical Times and Gazette* for May 10, 1884, I have given these facts in detail, and they so fully confirm Ritchie's statements that I venture to reproduce part of the paper here.

"Dr. Ritchie gives an extremely interesting account of the development of the ovular theory of menstruation having risen, apparently, in one of the essays of Sir Everard Home. When this author confined his original researches to hunting up some unpublished memoranda of John Hunter, he never went very far wrong, but when his originality was intrinsic his blundering became intense. Dr. Power, in 1820, assumed, and apparently confirmed, the correctness of Sir Everard, and various other writers followed suit till an apparently genuine contribution appeared in the "*Traité Philosophique de Médecine Pratique*," by M. Gendrin, and established the theory. Dr. Robert Lee appeared on the scene, and then began the great battle of the true and false *corpora lutea*—a battle based on the assumption of the ovular theory of menstruation, having for its object the establishment of a corollary as false as the main proposition, and constituting a quarrel as bitter, as fruitless, and as foolish as any to be found in the record of medical amenities. The struggle was only fading away when I entered college.

During the whole of the controversy upon these two points, lasting over fifty years, of course there were innumerable experiments upon animals. That these experiments were wholly useless is beyond doubt, and that they were entirely misleading is now universally admitted. Lest I should be charged with expressing a prejudiced opinion on this much-debated subject, I shall content myself with quoting the *ipsissima verba* of Dr. Ritchie, written in 1842:—"But, unfortunately for science and for multitudes of suffering quadrupeds sacrificed in a mistaken line of investigation, this conclusion did not happen to be verified by actual dissection." He further on speaks of the various misconceptions to which this method of investigation gave rise, and shows conclusively that by no experiments on animals could the enigmas of human ovulation and menstruation be solved. It was by post-mortem dissection that he made his discovery, and it is by ante-mortem dissection that I am in a position completely to confirm it.

After Ritchie's papers, the next contribution in order of date is in the *Medical Gazette* for 1849, by Mr. W. Bedford Kesteven, a very well known practitioner in the north of London, still living,

I am glad to say, in honourable and well-deserved retirement. Mr. Kesteven has made some notable communications in the direction of original research, and though there is little that was really new in the paper now under notice, it confirmed the views of Ritchie in very terse and convincing language. Thus, in answer to the one argument used against Ritchie, that in a few instances follicles had been found either just ruptured or on the point of rupturing in women who had died during menstruation, Mr. Kesteven says: "As ovulation is a constant function of the ovaries, and menstruation an occasional function of the uterus, the two may be expected to be found occasionally concurrent."

He also points out that if the maturation of ova occurred as the rule at the menstrual period, pregnancy would not occur so often as it does in the absence of the catamenia, as in the amenorrhœa of lactation and other conditions. He also argues from the case of the Jewish people with such force that I give his words in full:—

"According to the Mosaic law sexual intercourse is prohibited until after the eighth day after the appearance of the catamenia; to this strict Jewesses add five days more in obedience to a Rabbinical precept, and yet these women are equally if not more prolific than other females. Thus, if the ova be discharged only at the monthly period, these individuals become pregnant before the discharge of the ova. But the rigid observance of these injunctions by a large number of Jewesses, coupled with the known experience of accoucheurs generally that impregnation may and does take place immediately before the menstrual periods, affords a much stronger proof that the maturation of ova occurs at any time, than the occasional and infrequent observation of recently-ruptured ovisacs concurrently with menstruation affords of the menstrual flow."

Mr. Kesteven's statement about the general experience of accoucheurs is confirmed in Merriman's "Synopsis."

I have made a very diligent search for other contributions to this subject in the medical literature of the last twenty-five years, but with singularly barren results. Everywhere I am met by the accepted tradition that menstruation is due to a period of ovarian excitement caused by the ripening of a Graafian follicle, and that the termination of this is the grasping of the ovary by the infundibulum of the oviduct at the precise spot where the follicle is ready to burst.

Here and there, however, an occasional authority breaks away from the tradition, and gives an independent statement. Thus, Professor Hirsch (*Schmidt's Jahrbuch* for 1850) concludes that menstruation in women has no analogy with the heat of beasts; that fructification can be accomplished at any time, not at the period of menstruation only, as in the lower animals; and that

the function of the ovary is to be continually producing mature ova.

In the *Archives de Physiologie* for May, 1874, Dr. K. Slavianski states, as the result of his observations, that the development and maturation of the Graafian vesicles do not take place in any regular periodical fashion, and that there is no connection between these conditions and menstruation. This latter physiological phenomenon is entirely independent of the former.

Dr. de Sinèty, to whom we owe an immense debt for the elucidation of very many important points in the anatomy, physiology, and pathology of the ovary, in a paper communicated to the Société de Biologie on December 2nd, 1876, narrates a case of great importance by which menstruation without ovulation is established.

Dr. Jackson, quoting Goodman and others, shows that the statements of Leishman, Spenceer Wells, and others, to the effect that removal of both ovaries arrests menstruation are entirely wrong. He goes so far as to say that men who make such a statement now subject themselves to charges either of ignorance or want of candour. With this I quite agree, for I have added to the evidence abundant proofs that removal of the ovaries without injury to the tubes has often no influence on menstruation at all; that removal of the tubes, even when the ovaries are left, arrests menstruation in the great majority of cases; but that (as in one of Baker Brown's cases) even removal of the ovaries, tubes, and greater part of the uterus may not arrest or influence in any way the menstrual periodicity.

In the *British Medical Journal* for 1881 I published a letter in which I said that "evidence is rapidly accumulating in my hands pointing to the conclusion that ovulation and menstruation have no necessary connection, and that *corpora lutea* are not a necessary result of the maturation and shedding of true ova."

My chief purpose at present is to draw attention to the above conclusions by giving in detail the evidence upon which they are based—conclusions which are being strengthened as the evidence accumulates.

First of all let me say that abdominal surgery affords abundant opportunities of settling a question such as this; indeed, it is not creditable to the art that its settlement has been so long in abeyance. Sir Spencer Wells has performed over a thousand ovariectomies, in the great majority of which a healthy ovary was left. In the performance of the operation it was his duty to ascertain that the second ovary was healthy, and if the simple expedient had been resorted to of noting the appearance of the organs and the time of the menstrual month in which the operation was performed in each case, the ovular theory of menstruation would have been settled long ago.

The custom arose in the removal of an ovarian cystoma of selecting the time for the operation as nearly as possible equidistant from two periods. There was no really good reason for this, and in some cases arguments against it might be found. But when abdominal sections came to be performed for other purposes, such as the removal of the uterine appendages for bleeding myoma, pyo-salpinx, or chronic ovaritis, it soon became evident that it was best to operate just before or even during the menstrual period. The reason of this is that by this selection the patient is saved the pain and loss of blood of an additional period, for the operation brings on a period almost always; and if one is made to do for two, it is better. In the case of myoma there is the additional argument that the rest between the last period and the operation should be as long as possible. It has, therefore, come to me to be a rule to select the immediate approach of menstruation as the time for operation in many cases, and to be in others quite indifferent on the subject.

In the evidence about to be given in detail, I have not thought it worth while to tabulate the cases of double cystoma, because they go almost in a block to support the views of Ritchie. In a very few cases of double cystoma, and equally so in a few cases of single cystoma, the disease is associated with the arrest of menstruation, but in the great bulk of the cases menstruation goes on uninterruptedly. No one has yet claimed, save in the three published cases of Rokitansky's peculiar tumours, to have found ova in the cavities of ovarian cystoma, nor do we ever see anything like a ripening follicle; and in Rokitansky's tumours the ova are retained, not discharged. We must conclude, therefore, that in those cases of double ovarian cystoma in which menstruation goes on during the growth of the tumour, that process cannot in any way be dependent on the ripening and discharge of ova.

In cases of single cystoma, the argument for one ovary, that is half the work of ovulation, is just as conclusive. If menstruation depended on ovulation we ought to expect that during the growth of a single tumour about half the periods ought to be suppressed, but they are not; and this certainly ought to be the case after the removal of one ovary, but it never is. In such cases the condition of the healthy ovary is a matter of interest, and therefore I have noted it. Probably cases of parovarian tumours will prove to be the most satisfactory field for this enquiry, as in them the uterus and its appendages are wholly free from disease.

In the following narration, all cases of irregular and deficient menstruation have been omitted, as also all cases where the history was defective:—

1. August 7th, 1880.—Cirrhotic ovaries removed, age 31; menstruation regular, not a trace of vesicles of any kind in the glands; had menstruated five days before the operation.

2. August 10th.—Cirrhotic ovaries removed, age 28; menstruation regular, only one old vesicle to be found; had menstruated thirteen days before operation.

3. August 17th.—Appendages removed for severe menorrhagia, age 49; operation performed immediately after menstruation; one follicle half matured, no trace of one having recently burst.

4. September 1st.—Right ovary removed for cystoma, age 17; operation performed midway between periods; no trace of recently burst nor of ripening follicle in remaining ovary.

5. September 1st.—Appendages removed for bleeding myoma, age 47; both ovaries cystic, and entirely without traces of normal vesicles: the hemorrhage was periodic (menstrual), and lasted from ten to twelve days.

6. September 24th.—Appendages removed for double pyosalpinx, age 28; menstruation had been regular, profuse, and intensely painful; the tubes were glued on to the ovaries, and no vesicles could be found in the latter.

7. October 5th.—Appendages removed for double hydrosalpinx, age 32; menstruation had been regular, profuse, and intensely painful; both ovaries were disorganised by chronic inflammation, and no vesicles of any kind could be discovered in them.

8. October 6th.—Parovarian cyst, age 48; had not menstruated for a year; one well-marked follicle observed in left ovary.

9. October 12th.—Appendages removed for menstrual epilepsy, age 23; operation performed four days before an expected period; one follicle had just burst (probably did so during the operation) in the right ovary, and another was nearly ready in the left ovary.

10. October 26th.—Appendages removed for menorrhagia due to myoma, age 35; operation performed midway between the periods; one large follicle quite ripe in left ovary, another not so far advanced, and two evident, though smaller, in right ovary.

11. December 7th.—Left ovary removed for cystoma, age 21; operation performed just after a period; follicle recently burst in right ovary.

12. December 18th.—Appendages removed for menorrhagia; age 44; operation midway between periods; fully ripe follicle in right ovary, ruptured when grasped, and shed yellow body; one immature follicle in left ovary.

13. January 13th, 1881.—Appendages removed for myoma, age 32; operation performed during menstruation; both tubes grasping the ovaries, but no follicles ripe.

14. February 5th.—Appendages removed for myoma, age 41; menstruation regular and very profuse; operation performed between the periods; both ovaries cystic, and no follicles apparent anywhere.

15. February 12th.—Appendages removed for most terrible menorrhagia, due to myoma, age 43; operation performed just before a period; no trace of follicles anywhere.

16. February 17th.—Left ovary removed for cystoma, age 23; menstruation quite normal, operation performed just after a period; one immature follicle in right ovary.

17. March 2nd.—Removal of appendages for persistent menorrhagia, age 25; both ovaries cystic, but of small size; no follicles discoverable.

18. March 20th.—Appendages removed for myoma, just before menstruation, age 35; a fully ripe follicle in right ovary, and one almost as advanced in left.

19. March 29th.—Left ovary removed for cystoma, age 30; operation performed twelve days after period; fully ripe follicle in right ovary, and two others less mature.

20. June 15th.—Both tubes removed for myoma, ovaries being left, age 43; the right ovary was not seen, but the left had an almost ripe follicle; the operation was done almost midway between the periods; the patient has never menstruated since, and the myoma has almost disappeared.

21. July 2nd.—Right ovary removed for cystoma, age 38; menstruation regular; operation performed four days after period; when left ovary was being examined a fully ripe follicle burst.

22. August 8th.—Parovarian cyst of right side removed about eight days before period; an almost ripe vesicle was noted in left ovary; no vesicles at all in the right.

23. August 19th.—Appendages removed for pyo-salpinx, age 27; operation performed the first day after menstruation; no traces of follicles in the disorganised ovaries; menstruation had been regular and profuse.

24. August 22nd.—Right ovary removed for cystoma, age 18; menstruation just over; no trace of follicle in left ovary.

25. August 25th.—Appendages removed for persistent menorrhagia, due to myoma, age 38; both ovaries cystic; no trace of normal follicles.

26. September 17th.—Appendages removed for myoma with persistent menorrhagia, age 40; both ovaries cystic; no trace of normal follicles.

27. November 14th.—Removed appendages for hydro-salpinx, age 33; operation performed during menstruation; no trace of follicles in either of the ovaries.

28. November 22nd.—Left ovary removed for cystoma during menstruation, age 22; tube fastened on to right ovary, in which there was a follicle apparently quite ripe, but away from the tube at least half an inch.

29. November 30th.—Appendages removed for hydro-salpinx, age 37; operation performed midway between periods; no traces

of follicles in the ovaries ; the patient has menstruated regularly ever since, more than three years.

30. December 19th.—Appendages removed on account of intense pain produced by dislocation of ovaries into the cul-de-sac, age 29 ; operation performed about midway between periods ; a perfectly ripe follicle in each ovary, both of them discharging their contents during operation.

31. January 4th, 1882.—Appendages removed for persistent menorrhagia, due to myoma, age 36 ; operation performed about ten days after a period ; a perfectly ripe follicle in one ovary, several quite immature in the other.

32. January 10th.—Appendages removed for myoma, age 37 ; operation performed during menstruation ; each ovary was grasped by its tube, but there were no ripe follicles.

33. January 29th.—Appendages removed for myoma, age 46 ; the left ovary was grasped by its tube, and very near the point of grasping was a perfectly mature follicle, but the ovum on its escape, when the follicle ruptured, could never have been passed into the tube.

34. February 18th.—Appendages removed on account of persistent pain, age 43 ; operation midway between periods ; ovaries quite cirrhotic, and not more than one-third of the normal size ; menstruation had been perfectly regular, and normal in amount ; there were traces of vesicles throughout the ovaries. The removal of appendages arrested menstruation, and has cured the patient.

35. February 22nd.—Appendages removed on account of persistent pain and excessive menorrhagia, due to chronic pyosalpinx, age 27 ; no trace of vesicles could be found in the ovaries ; they were quite disorganised.

36. March 16th.—Appendages removed on account of persistent pain, age 33 ; menstruation regular ; operation performed just after a period ; not a trace of vesicles in the ovaries, which were shrivelled and deeply grooved in all directions.

37. March 31st.—Appendages removed for myoma, age 40 ; operation performed on second day of menstruation ; ovaries both cystic ; no normal vesicles, nor any appearance of embracement of the ovaries by the tubes.

38. April 5th.—Right ovary removed for large myoma, age 33 ; menstruation regular ; operation eighth day after period ; perfectly ripe vesicle in left ovary.

39. April 20th.—Appendages removed for myoma, age 21 ; operation performed during menstruation ; both ovaries grasped by tubes ; no ripe follicles in either ovary.

40. April 25th.—Appendages removed for menstrual epilepsy just before a period, age 25 ; ovaries contained a few cysts, but no follicles approaching ripeness.

41. May 5th.—Parovarian cyst removed ten days after period,

age 28; patient pregnant two months; a perfectly ripe vesicle in right ovary.

42. June 24th.—Parovarian cyst removed on third day of menstruation; right tube embraced its ovary, a ruptured follicle in left ovary, but left tube did not seem to be anywhere near it.

43. July 21st.—Left ovary removed for cystoma, age 22; operation performed eleven days after menstruation; a perfectly ripe follicle in right ovary, which burst and discharged its contents when handled.

44. July 24th.—Appendages removed for persistent pain, age 32; ovaries adherent and quite disorganised; no trace of follicles in them; menstruation had been perfectly regular and profuse.

45. July 25th.—Appendages removed for persistent pain, age 37; ovaries adherent; several follicles found in right ovary, but not approaching ripeness; operation performed four days after menstruation.

46. July 27th.—Left ovary removed for cystoma, age 38; menstruation had been quite regular, and patient had borne the last child only two years before the operation; there was no right ovary in this patient.

47. October 7th.—Parovarian cyst removed during menstruation, age 26; left tube embraced its ovary, but no follicle on that side; a perfectly ripe follicle in the right ovary.

48. November 6th.—Parovarian cyst removed, age 44; operation on third day of menstruation; both ovaries grasped by their tubes, and under the left tube there was clearly a ripe follicle.

49. January 28th, 1883.—Parovarian cyst removed on second day of menstruation, age 29; no embracement of ovaries, and no ripe follicles in the ovaries.

I made no notes of further observations, as I began to lose interest in the enquiry, being perfectly satisfied that the evidence so far has completely destroyed the ovular theory of menstruation. I am now persuaded, however, that it is worth further perseverance, as I am not sure that some of my other conclusions are quite as secure, and therefore I shall resume it. As it stands, the evidence seems to me complete on the one point for which it was taken. Of course, different people read the same evidence in different ways, and probably it will be so here; but in dividing the cases into three of the simplest and most natural groups, it seems to me that they arrange themselves as follows:—

1. Cases, nine in number, where it was evident that menstruation and ovulation were concurrent (Nos. 9, 11, 18, 21, 28, 33, 42, 47, and 48).

2. Cases of negative proof against the ovulation theory of menstruation, fifteen in number (Nos. 1, 2, 3, 4, 5, 6, 7, 10, 12, 13, 19, 22, 29, 38, and 45).

3. Cases, twenty-five in number, affording positive evidence against the theory (Nos. 8, 14, 15, 16, 17, 20, 23, 24, 25, 26, 27, 30, 31, 32, 34, 35, 36, 37, 39, 40, 41, 43, 44, 46, and 49).

Taking the average period of menstruation to be one-seventh of the month, and if we assume my theory of continuous ovulation to be correct, out of forty-nine observations we ought to have seven instances of ovulation observed during the menstrual period; and in the above table we have nine cases of menstrual ovulation. The close correspondence of these figures is not conclusive, but it is very suggestive that the association was not one of mere coincidence.

In such a case as this the want of proof is quite as strong for the purpose of a presumption as the presence of direct testimony. To the twenty-five cases of positive evidence against the ovulation theory of menstruation we must really add the fifteen negative cases, and then we have the overwhelming case against the theory that out of a continuous and consecutive series of observations we have the theory inapplicable in nearly 82 per cent. of the cases. To this also must we add the negative evidence of the cases of cystoma.

Should further research confirm these conclusions, the ovular theory of menstruation must be given up; and, in conclusion, I must point out two curious inconsistencies between the facts of my observations and the theory I have been discussing. From the appearance in Case 9 it might happen occasionally that menstruation should occur twice within a very few days, with perfectly healthy uterus and ovaries; for in that case and in others it was quite clear that two ova would be discharged within a few hours of each other. But we never have such an occurrence.

The second inconsistency is that the most marked and proper menstruation has been in cases of disease of the tubes, just as the most profuse lachrymation occurs in inflamed eyes; but in these cases, as a rule, not only is there no ripe vesicle to be seen, but the ovaries are generally so disorganised that no vesicles of any kind are visible. These conditions clearly show that the ovaries have little or nothing to do with menstruation, and render it highly probable that the tubes are largely concerned in it.

A further contribution on the same subject appeared in the *Gynaecological Journal*, in which careful microscopic research in the organs removed was made by my assistant, Dr. Annie E. Clark. The conclusions are practically identical, and the argument that ovulation and menstruation are not concurrent is complete.

Between October 31st, 1884, and the end of May, 1885, I removed the uterine appendages in fifty-one cases, for various reasons, and in the great majority of these cases a very careful research was made into the relations of the time of the menstrual month at which the operation took place, and the conditions of

the ovaries as far as ovulation was concerned. Of these cases those in which the ovaries appeared to the naked eye to be more or less healthy were given by me to my assistant, Miss Clark, who has made such careful observations of them that I present them *in extenso*.

In the case of the great bulk of the other ovaries, they were so disorganised that practically no kind of normal ovulation was discernible in them. Those I examined myself. They were either broken down by suppuration, occupied by cysts, or so altered by chronic inflammatory disease as to present nothing of the character of normal ovarian structure, and therefore all these cases, or nearly all of them, go to prove that no kind of pathological changes in the ovary makes any difference in menstruation. This has been long known to be the fact concerning cystoma, and if it were true that ovulation was the exciting cause of menstruation—that at every menstrual period a follicle was ripened, burst, and discharged *vid* the ovum—then we have the singular fact concerning this interesting organ, that diseases of any kind affecting its structure, even cancer, do not interfere in any way with the fulfilment of its function. We should also have the singular fact that removal of the organ does not apparently interfere with, in many instances, the sequence of its function, for in many cases where both ovaries are removed menstruation is carried on for some considerable time after. In those cases in which, as I have already said, the ovaries appeared more or less healthy, Miss Clark has made very careful dissections of them, and has put on record what she found.

It might be seen by the most casual investigation of these dry details, if it were worth while to repeat them here, that hardly a healthy ovary can be found amongst the lot, and many of them go so far as to represent practical destruction of the organ. In cases of myoma and inflammatory disease of the Fallopian tube the function of menstruation is exaggerated, and always altered very materially; whereas, when the tube and uterus are not so affected, and the ovary alone diseased, no such alteration of menstruation is noted. When there is disease of the tube and no disease of the uterus, menstruation is exaggerated, and correspondingly, when there is disease of the uterus and no disease of the tube, again menstruation is increased, alike in frequency and quantity. We are therefore driven to the conclusion that the function of menstruation must be associated with the uterus and tube—that is, practically with the one organ, for the Fallopian tube is but an extension of the uterus; indeed, what we call the Fallopian tube is truly a part of the uterus, the true Fallopian tube being little more than the ostium externale.

I divided the cases noted by Miss Clark into three groups; and although it was perfectly evident that each reader of the notes might be disposed to arrange them in a fashion of his own,

if we arrange them at all on a theory that ovulation and menstruation are coincident, we must accept one principle—Fawsitt's division, which is that, under the belief that menstruation is excited by the presence of a ripe follicle, we must have clear evidence that the operation has been at or near the time of menstruation, that there is a follicle on the point of rupture, that it has just ruptured, or that it shows such appearances of rupture that, dating its appearances backwards from the time of the operation to the time of menstruation, those appearances of rupture are compatible with the time that has elapsed. On this principle I found that out of twenty-eight cases there are only three which go to show that menstruation and ovulation are coincident; on the contrary, there are seventeen cases which go to show that ovulation is continually progressive (at what rate we have no notion at all), but that it is not coincident with menstruation. Then there is a third group of eight cases, which I labelled doubtful, because it was impossible to see what their relations were; but, putting on its trial the ovulation theory of menstruation, in these doubtful cases they must be regarded as evidence against it, because it is clearly evident, where any evidence exists, that as no inherent testimony supports the doctrine it must be considered as testimony subverting it.

Group 1.—Cases which go to show that menstruation and ovulation are concurrent: III., XXII., XXVIII.

Group 2.—Cases which go to show that ovulation is continually progressive, and not coincident with menstruation: I., II. IV., V., VI., VII., XII., XIII., XIV., XV., XVII., XVIII., XXI., XXIII., XXIV., XXV., XXVII.

Group 3.—Cases doubtful: VIII., IX., X., XI., XVI., XIX., XX., XXVI.—(*British Gynaecological Journal*, 1885.)

I conclude, therefore—(1) that not only is the œstrus in animals not the homologue of human menstruation, but that the latter is a new phenomenon introduced high up in the evolutionary scale, and due to the upright position; and that (2) ovulation and menstruation are not only not concurrent, but that ovulation is much less frequent than menstruation. It may be periodic—we do not know; we may be certain that it is not regularly progressive, from the ordinary appearance of the ovaries at all ages.

We may begin now to ask, What is menstruation? And in reply to that question we have theories enough to satisfy the most adventurous speculator. That it has to do with impregnation there can be no doubt. The evidence of obstetricians is conclusive that fairly accurate calculations of the duration of pregnancy may be made dating from the cessation of the last period. But this does not make it necessary that an egg must pass into the uterus every month, or even that one must be shed by one ovary. What it must mean, however, is that menstruation must have some

essential bearing on the retention of the ovum in the uterus, possibly with its impregnation. We have, therefore, the fundamental idea of nidation—an idea and a word both due to the scholarly mind of Dr. James H. Aveling. They are both of immense value, and will be retained, although the full expression of his theory of nidation will not be maintained.

The three essential factors in women for fecundation are (*a*) ovulation, (*b*) tubal transmission of the ovum, and (*c*) preparation of the uterine surface for its retention, its early nutrition, and the subsequent formation of the placenta. The occurrence of this last is periodic and rhythmic. The second is probably concurrent with menstruation—that is to say, the necessary muscular peristaltic movements are menstrual. Of the third we know little or nothing, save that it is not concurrent with menstruation. The whole process is, therefore, like a time-lock—three discs travelling round the same axis on different axles, at different speeds. An aperture exists in each through which the key may be passed, and a time must come, if the machinery is in working order, when the three slots will be superimposed and the lock opened. It is fortunately ordained that this does not occur every month, and unfortunately the machinery is liable to horrible disorders.

If the ovary has nothing to do with menstruation, how is this peculiar phenomenon directed? I cannot assert anything in answer to this positively, save that it must be by some nervous mechanism, just as blushing is, and as is the contraction of all involuntary muscular organs. A tubular theory of menstruation has been attributed to me by Professor Martin, of Berlin, and others. But that only shows that they have not read, certainly they cannot have understood, what I have written. Of course they object to my disbelief in their ovulation creed, but with the arguments before me, and with a total disregard for mere weight of authority, I cannot accept it. I have found by clinical experience that removal of the tubes without touching the ovaries at all will arrest menstruation in about 95 per cent. of the cases; but it does not do so in the other five. But in some cases—I have been watching three of them for years—removal of both ovaries, both tubes, and five-sixths of the uterus will fail to arrest menstruation. One of my cases was a pregnant woman in whom I performed Porro's operation many years since, and she menstruates still quite regularly, in a manner normal in every respect. What can we say to this? I do not know, save that we must fall back on a nerve mechanism, which in such exceptional cases may be abnormally distributed or placed, and therefore not destroyed by our operations.

My former pupil, Dr. Arthur W. Johnstone, of Danville, Kentucky, pointed out to me a big nerve trunk which runs in the angle between the round ligament and the tube as a possible

governing structure for menstruation. I always aim now for the destruction of this trunk, and since I have done so my exceptional failures have diminished beyond doubt.

All that I have said further in the shape of a "tubular theory of menstruation" is that the tubes are the starting-point of the process. I never said they were its cause. That they are the starting-point is proved by the clinical fact that the characteristic symptom of tubal occlusion and distention is premenstrual pain. This must be due to muscular contraction of the tube, and this is a peristalsis exactly like that of intestine. I have seen it often in removing a tube, and the peculiar mamilla formed by the cut end of a tube a few minutes after its removal proves it completely.

If the tubes, therefore, are the starting-point of the menstrual phenomena it is not unreasonable to suppose that their removal will be a very effectual method of stopping it altogether, just as you stop the growth of a fir tree by cutting off its leader. And it is a clinical fact beyond dispute. But I never said, I never believed, that the tubes caused menstruation any more than the governors of a steam-engine can be supposed to drive the machinery.

Dr. Loewenthal, of Geneva, has published in the *Archive für Gynäkologie* (Band xxiv., Heft. 2, 1885) a most interesting paper, in which he advances views largely consistent with my own. His propositions are the following:—(1) The periodical bleeding from the female genitals is not the consequence of—though mostly coincident with—the bursting of a Graafian follicle; but that of the disintegration, independent of and preceding the bursting of the follicle, of the uterine decidua. (2) The production of the menstrual decidua is the result of the embedding in the uterine mucosa of the ovum, unimpregnated, which was last discharged from the ovary. (3) If the ovum be fertilized the menstrual decidua continues to develop, and forms the decidua of pregnancy; if the ovum be not fertilized it dies, and in consequence of its death the decidua breaks down. (4) The bursting of the follicle and the menstrual hæmorrhage have no other connection except that the conditions which cause and accompany the bleeding may determine the moment at which a ripe follicle bursts. (5) The connection between the bursting of the follicle and menstruation is not a necessary one. Each may occur independently of the other. A follicle may burst without the formation of menstrual decidua; and the hæmorrhage, being the result of changes determined by the ovum last discharged, may occur without the bursting of a fresh follicle. (6) The periodicity of menstruation is dependent upon the duration of the extra-follicular life of the imbedded but unimpregnated ovum. The deviations from periodicity depend upon shortening or absence of this extra-follicular life. (7) Pregnancy takes place in an ovum which has been discharged from its follicle, generally at the last menstruation,

and is in normal cases in the uterus, but in abnormal cases may be outside it. From this theory the author draws the following practical conclusions:—(8) That the menstrual bleeding is neither a physiological function nor an accompaniment of one, but it is a consequence made habitual by innumerable repetitions of a state of things artificially produced—viz., the non-impregnation and death of the egg; it has all the peculiarities and effects of other undoubtedly pathological hæmorrhages. (9) It is increased and diminished by the same causes as other hæmorrhages. (10) The hæmorrhage accompanying the discharge of the menstrual decidua is to be regarded as harmless only if it takes place by diapedesis; if it is more active than this it is unnecessary, and if felt by the organism as a loss it is hurtful. (11) The degree of its injurious effects depends upon the relation between the amount of blood lost and the quantity and quality of blood present in the body at the time. (12) In these conditions the indication is to check the menstrual bleeding, like any other, as much as possible. (13) For this purpose the means chiefly to be recommended are rest in bed and hot-water injections. (14) On the other hand, idiopathic amenorrhœa should in no circumstances be regarded or treated as a disease; it is only a sign that a function (ovulation) which is not necessary to life is, from some cause, not being fulfilled. (15) "It follows, from the author's theory and from the observations published by Lawson Tait, that in cases in which the anticipation of the menopause is indicated, salpingotomy—that is, partial resection of both tubes—should be performed instead of castration. (16) If for any reason removal of the ovaries has been attempted, and it is found impossible to remove them completely, salpingotomy is directly called for."

I do not see how it is possible to advance any speculation as to the *cause* of menstruation other than it can exist in a nervous mechanism, and there, for the present, we must leave it.

The purpose of the phenomenon is more intelligible, however, and unfortunately the cause and the purpose have been inextricably confused by most writers, especially Dr. John Williams. Confining ourselves to the purpose, we are at once attracted to Dr. Aveling's nidation theory, and when this is read in the light of the brilliant researches of Mr. Bland Sutton and Dr. Arthur W. Johnstone, I think the answer is clear and complete.

It is a remarkable fact, and one of great interest in the history of the development of this most interesting question, that the papers containing the result of the work of these two observers were both communicated to the British Gynæcological Society on one evening (June 23, 1886), and that without any knowledge on the part of either that the other worker had been making such investigations, or had a paper ready on the subject. Yet to read the two papers one after the other, their interdigitations are so

extraordinary that it would seem as if they had been in collusion. Their corroborations, therefore, make their evidence quite overwhelming.

Their main conclusions, first, for the acceptance of Dr. Aveling's theory of nidation, and their qualification of his description of the process of denudation, form really the basis of the advances they have made. Thus Mr. Sutton qualifies the usual definition of menstruation as "a periodic discharge of blood from the uterus" by the very important addition, "*accompanied by the shedding of the epithelium of the body and the fundus, as well as that lining the utricular glands near their orifices.*" He says the epithelium of the cervix does not participate in the changes, and that the Fallopian tubes remain passive so far as this mucous membrane is concerned—a most important fact this latter, as will by-and-by be seen when I discuss the pathology of extra-uterine pregnancy.

Dr. Johnstone completely confirms the facts of Sutton by saying of his examinations of the mucous surface of menstruating uteri, that in them he could find no lesion whatever, "except the stripping off of the epithelium lining their cavities and the outer ends of the follicles"—a confirmation almost word for word.

The views advanced by most writers on this subject previous to Sutton and Johnstone were that the mucous lining of the uterus was thrown off almost in its entirety, and, curiously enough, they both select Dr. John Williams as the chief object of attack and blame for this error, and with one consent they show that the error was due to ignorance of the proper methods of and subjects for examination. Sutton says that "if due care be taken in the process of hardening the specimens, the destruction of nothing but the lining epithelium can be seen; but that if the pieces of the uterus be badly preserved, or a long time elapse before the parts are placed in the hardening media, the changes described as denudation may be easily made out"—that, in fact, the appearances described by Dr. John Williams were of his own creation.

Johnstone further points out the errors of John Williams in this trenchant fashion:—"The first is that the specimens on which he bases his theory about the total destruction of the mucous membrane were taken from patients who had died of typhoid fever and other high-temperature diseases, which are proverbial for softening and degenerating tissues. Who at this late day would think of working out the histology of the liver, spleen, or pancreas from such a source? Even though the adenoid theory be denied, what else could we expect but that such a naturally soft tissue should be found in an almost sloughy condition? Just listen to this list: No. 1, typhoid fever; No. 2, tetanus, though he does not say what from; 8th, typhoid fever and peritonitis; 10th, uterine fibroid, mode of death not stated; 11th, pleurisy; and 12th, operation for fistula in ano. All these cases were

menstruating at the time of death, and in all he found softening and greater or less destruction of tissue; and could we expect anything else? The other five cases, with which he gives a good picture of the normal growth of this tissue, contain three accidents, one peritonitis, and one pneumonia, all five of which were as we might look for. So, as then, my first protest is that his paper describes a pathological for a physiological condition. The second objection is that his powers are too low. Now, do not understand me to say that he ought to have used a 3,000. But I am confident that if his fig. 1 in vol. II. of the *Obstetric Journal*, p. 686, had been drawn under 800 instead of 150, as it seems to be, that in spite of the sloughing of his fever case, he would find himself in the deep layers of the mucosa instead of the muscular wall, as he thinks; for his sketch shows four clearly-defined utricular follicles, and on that scale I regard it as perfectly impossible for anyone to tell the difference between one of the bands you see stretched and a good big muscle-fibre. So I think we are forced to the conclusion that the strongest paper ever written on that side of the subject was started from erroneous data, and of course its conclusions cannot be trusted."

We are, therefore, driven to Sutton's conclusion that to call any hæmorrhagic discharge from the uterus a "menstruation" is a blunder, and it certainly is one to which we owe much of mistaken pathology and equally mistaken treatment of diseases of the uterus. He says that "under the term *menstruation* physicians generally include almost any escape from the uterine passage," whilst from the words I am quoting it is quite clear that the main factor of the process is the preparation of this uterine mucous surface for the retention of the ovum, after its fertilization, by the denudation of its epithelium. The loss of blood accompanying this (as is clearly shown by the researches of Johnstone on the wombs of animals) is an introduced accident. Pregnancy may occur without it in women, but without it the retention of a fertilized ovum seems impossible; and this conclusion sheds a flood of light on the facts of intra-uterine disease which were, without it, wholly unintelligible. A normal adult uterus, therefore, menstruates—that is to say, it denudates—once a month, and then, if a mature ovum is met in its cavity by healthy spermatozoa, the ovum is fertilized and retained—a simplified view of the whole question which commends itself at once as likely to be on the road to truth, if it be not the whole truth.

On the other hand, diseased uteri have hæmorrhages without denudations; infantile and senile uteri have neither hæmorrhages nor denudations, and therefore pregnancy in them is impossible—conclusions which are parallel with the facts alike of health and disease. Finally, the implantation of a fertilized ovum can take place only on a healthy mucous surface, freshly denuded; and

here we have the explanation of the facts of the dating of pregnancies, and the story so far is complete.

But the interesting work of these two authors has much more to tell us. "Before menstruation," says Sutton, "the (mucous) tissue is everywhere infiltrated with rounded and irregularly-shaped cells, which for convenience may be denominated the corpuscular element. These cells diminish very considerably in numbers after the menstrual flow has ceased, to reappear immediately before the next period. It is exceedingly probable that the corpuscular element is due to the increased quantity of blood in the organ." Johnstone confirms this, and gives a beautiful drawing of the corpuscles, which I here reproduce (Fig. 43), and another from a

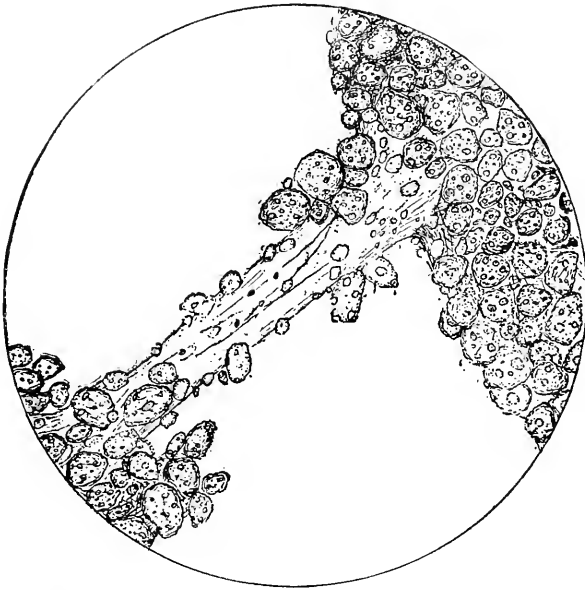


FIG. 43.—Fibre of endometrium showing different grades of corpuscular development. $\times 3000$.

menstruating uterus, where the whole process is seen. "In it you see everything—the epithelial covering freely developed: the fine threads becoming granular, and the corpuscles becoming more numerous."

Both Sutton and Johnstone agree in the statement that the only change in the mucous layer of the lower animals is one of simple turgescence, with increase of corpuscular elements. In none of the higher apes was Sutton able to detect anything approaching

to denudation. So that he was led to say that there was nothing like true menstruation occurring in these animals. I think, therefore, it would be better to reverse the conditions of Mr. Sutton's definition of menstruation, and say that it consists of "a shedding of the epithelium of the body and fundus of the uterus, as well as that lining the utricular glands near their orifices, accompanied usually by a periodic discharge of blood"

Johnstone has carried his observations somewhat further than the point at which Sutton has arrived, and up to this point they entirely agree. The further consideration of this most interesting question on the lines upon which I propose to take it is chiefly based upon Johnstone's observations, which I have no hesitation in characterizing as the most brilliant contribution to this subject which this century has seen.

Johnstone starts on a generalization which is really the conclusion of his observations, at once startling and revolutionary. But upon the mature consideration of his communication, and still more upon what I can speak from personal investigation of his sections and their method of preparation, I can have no doubt at all that it is the correct one. Briefly stated, it is that. "in the ordinary acceptation of the term, the endometrium above the internal os is not mucous membrane, but belongs to the so-called adenoid tissue, and that menstruation is for it exactly what the lymph stream is to the lymph glands, or the blood current to the spleen." By menstruation, of course, here he means the hæmorrhagic process, though it is quite likely that the denudation—that is, the stripping off of the epithelium—is equally the result of the effusion of blood. It is then carried away, along with the corpuscular elements, into and by the stream. The development of this corpuscular element, according to his observations, is exactly what he has established to be the fact in the blood-glands, such as the spleen, thymus gland, &c. The corpuscles are developed, not by subdivision of cells, but by generation *de novo* from the sustentacular threads, and the drawing which I have reproduced (see Fig. 8) gives an admirable illustration of the facts—facts which I displayed in a paper which I read before the Royal Society of London in 1876, on the "Minute Anatomy of the Umbilical Cord." That paper displayed exactly the facts of his drawing, though I am bound to say I did not understand them, nor was there any attempted interpretation on my part in the least degree allied to that of Dr. Johnstone. The only consolation that I have is that, by the early use of a high-power immersion lens, I did see these things, and I now know how it is that the umbilical cord grows without a direct vascular supply.

The story of the development of the endometrium has been completely worked out by Johnstone, and the story is a most satisfactory one.

Speaking of his second illustration (Fig. 44), he says, "A casual glance would make us think that her endometrium (a child of eleven years of age) was nothing but a thick, dense layer of fibrous connective tissue between the muscular wall and the very slight, badly-developed row of round cells which take the proper place of the lining epithelium. But, examined with high power, it can be easily seen that this is not ordinary white connective tissue, for its elements have no proper, large, well-formed nuclei, which fibrous tissue of this age always has, but the fibres are composed of a fine thread-like tissue, which adenoid organs alone possess. A few corpuscles are dotted through its meshes, and the little pits which form the glands of the future are conspicuous for their shallowness." The conditions here described were entirely confirmed by the investigation of a section of a case of infantile uterus which I was enabled to place at Dr. Johnstone's disposal for his research. We see, therefore, that this remarkable condition of arrest of development, and all the inherent sufferings attached to it, are precisely those of the period from which it gets its name. The nerve mechanism, as well as that of the vascular supply, obliges the uterus to perform work for which it is not fitted, and the result is intolerable suffering.

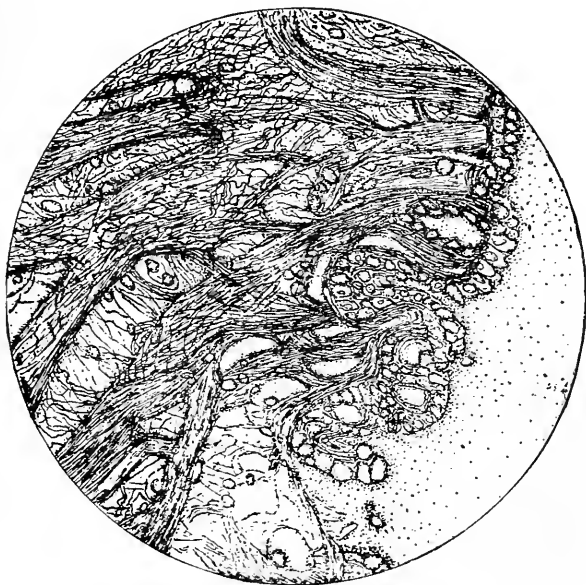


FIG. 44.—Endometrium of girl eleven years of age, showing no corpuscular development. $\times 800$.

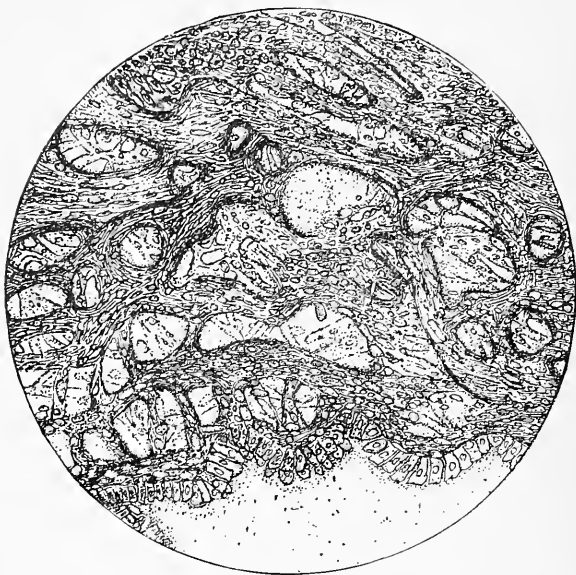


FIG. 45.—Endometrium of girl thirteen years of age, menstruated twice, showing beginning of corpuscular development. $\times 800$.

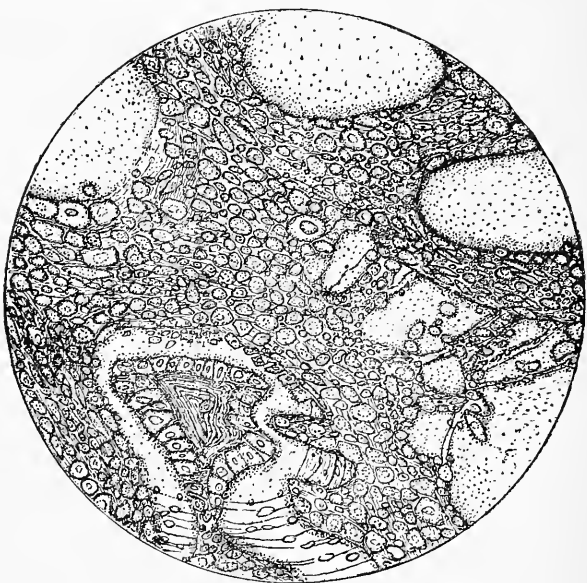


FIG. 46.—Menstruating endometrium of woman aged twenty, showing utricular follicles denuded of epithelium, with one still containing epithelial cast. $\times 800$.

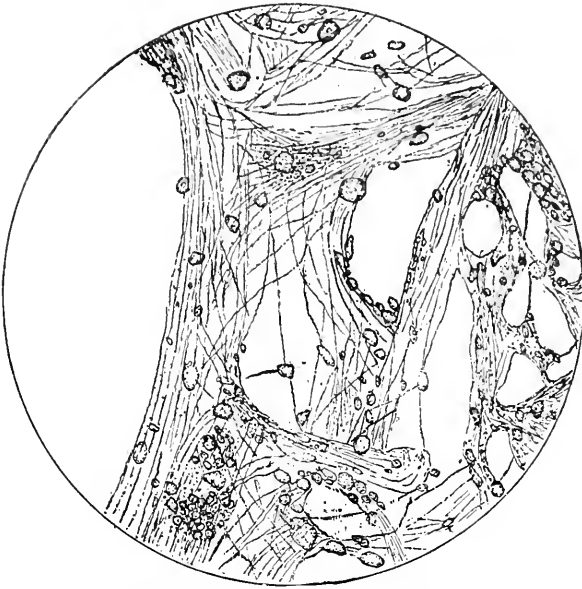


FIG. 47.—Endometrium of woman aged sixty, showing exhaustion of whole structure. $\times 800$.

The next illustration (Fig. 45) is the endometrium of a girl of thirteen who had menstruated twice, and there may be seen the epithelial lining freely developed. The fine threads have become granular, the corpuscles are more numerous, and the whole is much richer in the so-called protoplasmic elements, while the dense bands still remain, and anyone familiar with the adult tissue can see that this is a near approach towards it.

The fourth illustration (Fig. 46) is from a full-grown developed woman of twenty, in whose endometrium there are all the conditions which are familiar—bands, plates, threads, and everything studded with their protoplasmic out-growth, ready to take up and nourish the ovum by forming its placenta. But at this stage it may be said that the endometrium has reached the highest point of its unimpregnated development. This remains through the period of life during which puberty is passed. The ruin to which old age brings it is well shown in the last illustration (Fig. 47), where the absence of the large bundles and the thinness of the whole membrane show its senile decay. The fibrillar structure seems wasted, corpuscles are few, and the utricular follicles shrunken and scanty. Precisely as we might expect, the condition of infantile uterus gives the microscopic appearances of arrest of development in its glandular constituents most thoroughly, and the final proof of Johnstone's views is derived from the examination of such an example. "In

a case of arrest of development, of which I now have in my possession the specimen, the uterus measures barely two inches, and the woman from whom it was removed, though aged thirty-nine,

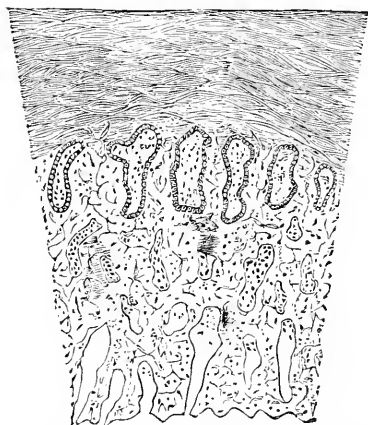


FIG. 48.—A transverse section of the uterus of a woman aged twenty-two who died during menstruation. The drawing shows the shedding of the epithelium of the mucous membrane and of the utricular glands (Sutton)

and an unusually large and fine-looking woman, had always great irregularity and difficulty in menstruation. It was one of those queer and formerly inexplicable cases when sometimes there would be for a period of several years total arrest of menstruation; at other times she would be comparatively regular for a year or so. The microscope showed her endometrium to be between the conditions shown in my paper on the menstrual organs of eleven and thirteen. So that, after all, the poor creature had gone through life trying to menstruate with an endometrium that was not far removed from the condition of the pig's, but with the one great exception that she had little or no lymphatic stream with which to relieve the tension. This adenoid view of the endometrium and its method of forming the placenta at once explains to me the mechanism of membranous dysmenorrhoea and the formation of uterine moles. By some irritation it gets a false start, and the attempt is made at a rudimentary placenta; so that, after all, they are merely slight perversions of a physiological function. The cure of chronic and corporeal metritis by the curette, chemical irritants, actual cautery, and other powerful revulsives is accomplished not only by the mechanical removal of the indurated tissue, but by these proceedings the tissue is returned to the medullary state, and from the fresh start the tissues resume their normal condition."

Concerning the functional relations of the uterus and ovaries Johnstone thus most aptly expresses himself, and confirms, even in the mere statement of the analogy, the facts which Ritchie, Reeves

Jackson, and a host of others have in vain been trying to persuade our professional brethren are really true. He says (*Transactions British Gynaecological Society*, 1887, p. 390): "The uterus, instead of being a mere appendage to the ovary, is as much a specific organ as the ovary itself, and its independence and totally distinct functions we now as thoroughly understand as we do those of the matrix of the egg. Its association with ovarian activity is that of two separate departments of an army, each of whose work must be thoroughly accomplished before the one common object can be attained. They are both controlled by branches from the sympathetic system, and instead of their actions being determined by each other, their orders come from that higher power which controls all functional activity."

We have, then, the story of the endometrium, that it is formed, as Johnstone says, most intensely like the hair-follicles of the face in the male, whose first products herald the approach of adult life; probably they have been there before that, lying in quiescence. They are active during the period of full sexual life, and then, in the period of senility, they undergo decay and disappear.

The endometrium is perforated at that time by the so-called glands, whose ramifications convert the whole into a sponge-like mass, all of whose channels lead into the cavity of the body. Its epithelial covering consists of a single layer, which slips into every reduplication of the glandular canals, and thus gives a soft protecting coat to the soft protoplasmic tissue. We know by clinical experience that change is effected in this by disease, and the results arising from it concur absolutely with his microscopical description, and the conclusions to be determined therefrom. When by chronic villous endometritis this endometrium becomes too pronounced, we have a hæmorrhagic discharge and profuse menstruation, which is easily cured by the curette. We have also, as I shall have further on occasion to speak of, a complete clue to pathological changes from this view of Johnstone's. We have a clue, I believe, to the cause of the frequency of cancer of this organ. for the view I have held and taught of cancer of the uterus for many years past is that it is essentially a disease of the endometrium, beginning there uniformly. Whatever its changes may be in its progress, its inception is always in this layer. Johnstone has continued his researches into the comparative anatomy of the endometrium, and his conclusions are equally interesting. He finds that in the ruminants the epithelial covering is like that of the human uterus, except that it is much thicker, often containing as many as eight or ten layers, with this remarkable point of difference—that there is an immense number of lymph canals, whilst in women these are very few, mere evolutionary survivals. In the cow and sheep he has found that not only the space between the cytogenic layer and the muscular wall is

taken up with a rich layer of lymph canals and intercellular spaces, but that the plexus of vessels themselves are richly supplied with lymph radicals and perivascular sheaths, such as are found abundantly in the brain and optic nerve of every animal. In fact, the arrangement gives exactly the impression of a modified lymphatic gland. In the sow, on the contrary, the lymphatics are not nearly so rich, and the relations between the muscle and the endometrium are a nearer approach to what is found in women. With the exception of the very thick epithelial coat, the internal aspect of a sow's uterus is merely a reproduction of what is found in the human being. But the parenchyma is that of the child's uterus before menstruation, and not that of the adult.

The difference between the conditions found in women and those of the lower animals Johnstone attributes to the erect position of man. Thus he says, "In two of the ruminants that I have examined it appears that nature has supplied the endometrium with an abundant lymph stream, which in the unimpregnated state washes away the ripe material to the general circulation exactly as it does any other lymph corpuscle. But in women, where, on account of its erect position, the uterus has to depend on the tenacity of its own fibres for the preservation of its shape, no such thing as loose tissue of a lymphatic network can be depended upon. So, to preserve the integrity of the uterine wall, the emulgent stream is poured into the cavity of the body, and got rid of through the vagina."

Here, then, we have the explanation—the only thing which was wanted for the capping-stone of the edifice—of the introduction of this process of menstruation in the human being, and of its supposed appearance in the higher apes. I do not think it is going too far to apply this explanation to the excessive amount of suffering which seems to have been introduced into the whole scheme on the appearance of the erect position, and the extremely peculiar functions of the human uterus, which oblige it to be one of the main factors of the sufferings induced by the process of civilisation.

"Finally," says Johnstone, "the microscope confirms the long-known clinical experience that the nest is always ready, but that, like everything else about a woman, there are times when it is the better for a clearing out. The well-known fact that pregnancy is much more apt to occur directly after menstruation has always been a stumbling-block to the acceptance of the denudation doctrine, for I am sure that no other female will lay in a nest directly after she has destroyed it. Therefore the simplest definition of menstruation is a periodic wasting away of those corpuscles that are too old to make a placenta. Stripped of its epithelium, the endometrium reminds one very forcibly of the sponge-like tissue of the lymph glands, and it is very easy to see

how like the lymph stream the menstrual blood creeps through its meshes and washes away the corpuscles exactly as it is constantly doing in the spleen. It may be urged against the views I have advanced that if this is an independent organ, how is it that the removal of the uterine appendages puts a stop to its functions? My answer is, How is it that a section of the chorda tympani practically destroys the sub-maxillary, or the excision of a piece of the great sciatic eventually results in the shrinkage, if not in the sloughing, of the whole limb?" (P. 301).

In a more recent paper, read at the meeting of the American Gynæcological Society in 1887, Dr. Johnstone continues his remarks on this most interesting subject, and these I have already quoted at length at pp. 158—9.

One can only say, in conclusion, concerning this remarkable doctrine of Johnstone's that its very simplicity will form the greatest stumbling-block to its acceptance, for the trouble has been all along with physiologists and pathologists in the past that nothing which is not circuitous, complicated, and in the main incomprehensible, will suit them as an explanation of the processes by which nature has arrived at her results. The strongest objection which was ever advanced against Darwin's theory of the origin of species was the sublime simplicity of the process by which it was accomplished. So I expect that this doctrine of Johnstone's, which to me is as effectual in the explanation of the physiology of menstruation as it is capable of adaptation to the pathology of the uterus and its appendages, will probably lie in obscurity for a century or two, until we have got rid of the cobwebs of German transcendentalism with which the whole of this question has been for the last twenty-five years embittered.

It must always be a matter of difficulty to decide in which order diseases of the special organs of women may be discussed, for their relations are so inextricable that no logical arrangement can be determined upon, and the mere order of historical display is not definite enough, nor indeed has it sequence enough or consistency to enforce its adoption. Ovarian tumours formed the most striking diseases of the uterine appendages, and therefore they first drew our attention upon them. It will be seen when I come to speak of the history of ovariectomy, that for three quarters of a century the treatment of ovarian tumours hovered between success and failure, and was for at least fifty years a fertile field of battle between those who favoured progress and those whose mental organisation was such as to lead them to oppose it. Even in my own student life (1860—5) the question "Is ovariectomy a justifiable operation?" exercised the ingenuity of our boyish debating efforts, and the conservative tendency held full power in preventing our efforts being extended beyond this limited area until as late as 1878. The reasons for this will be found detailed

in the appropriate place. Let me here only anticipate to this extent: that the price for any other advance, based on the value of ovariectomy, seemed too high. The mortality of ovariectomy, so long as the clamp was employed, was twenty-five per cent. The natural consequence of this was that all interference with these tumours was deferred as long as the patient could bear them. They were tapped and messed with and the radical cure delayed, so that this very delay increased the subsequent risk enormously. It was never imagined that there were other conditions, less obtrusive but quite as deserving of surgical treatment as big tumours of the ovary. I cannot find anywhere the record of any departure from this rule previous to that which I made on February 11th, 1872, when I removed a small ovary, not much larger than a pigeon's egg, entirely on account of the intolerable pain caused by an abscess in its substance. Soon after I saw other cases like it, and again I operated, finding sometimes pus in the Fallopian tubes and sometimes other conditions; so that gradually I established a rule of practice for myself, that I should not confine my surgical efforts merely to save patients from dying from ovarian tumours, but that I should extend them to a higher function—the relief of suffering. We have been fighting this question for now sixteen years, and the story of the battle will largely engage these papers. Victory has been on the side of progress, and not only have we made substantial additions to the progress of the healing art, but a flood of light has been let in on the obscure pelvic diseases of women as a necessary coincidence.

Nothing is more interesting in the evolution of any human advancement than to look back in history and see when the first indications of it were laid down. It is curious to know that Philipp Reis invented the telephone in 1859, and published a full and detailed account of his discovery and invention in 1861, yet that the significance of the whole thing lay unnoticed until it was re-introduced by Graham Bell in 1876. Reis died at the age of forty, a poor starved schoolmaster, at Friederichsdorf; Bell has made an enormous fortune and lives in luxury. The lesson which ought to be learnt from such instances is always forgotten, that it is a deep humiliation to the whole human race that the suggestions are not taken from the early observers: and so it is in the present case. For centuries pathologists have been describing the diseases of the Fallopian tubes which now attract so much attention, and the very existence of which has been denied by some writers within the last few years. "It is very extraordinary," said Sir Spencer Wells at the International Congress in London, 1881, "that so many such cases should occur. I have seen only one in my lifetime. Perhaps they all go to Birmingham."

Clinicians, also generations ago, described their symptoms just as we know them now, whilst the natural history of cases of

abdominal wounds was pointing the way to the cures we now effect. Yet we were none the better for the lessons taught in these directions.

The first discussion of the pathology of the Fallopian tube which I have been able to trace is the observation of Friedrich Ruysch, in 1665, that occlusion of the tubes is a cause of sterility—a fact which many who have taken part in recent discussions altogether overlook when they talk of unsexing a woman by removing diseased Fallopian tubes. Josias Weitbrecht, the great anatomist of St. Petersburg, in his anatomical observations (1742), describes the obliteration of the tubes in a woman who had had one child and then remained sterile. It was, in fact, just such a case as we find commonly enough to be the result of puerperal perimetritis. John Henry Brechtfeldt, of Copenhagen (1675) describes a case of dropsy of the tube which he cured by paracentesis, the woman having a successful accouchement afterwards; but in this case the certainty of Brechtfeldt's diagnosis is open to doubt. Here is his original record (*Acta Medica et Philosophica Hafniensia*, 1671—2).

Hydrosis dextræ tubæ uterī paracenthesi curatus.

“Reverendi Don Justi Oldecops, pastoris in Neapoli, Hildesiana vigilantissimi conjugii tumor ingens in dextro inguine paulatim subnascitur, undi musculo psoas ita comprimetatur ut nec corpus ingere nec progredi sine ligneo adminiculo posset. Vocatus in consilium tumorem promissis universalibus per debita linimenta et emplastra satisdiu applicata resorbens tentu ceterum dum eundem neg; discuss neg; emolliss sed, indies potius augmentum capere cerno ex tumoris figura semicirculari et suppressis menstruis malum profundius delitescere et quidem in ipsa uteri tuba persuasus de paracenthesi cogita et dum ægram operi faventem intelligo chirurgum lanceolam in decliviorē partem tumoris satis profundi adigere jubeo sed cum nihil nisi modicum sanguinis efflueret tumidam longi usculam et duresculam vulnere intruderi lidem præcipia quam cum eodem die iterum extraheret aqua limpida et inodora ex vulnere cum impetu proselit quæ deinceps ad plurimum librarum mensuram per vices extracta propter illam quæ per vacua musentorum spatia in crus lateris affecti distillaverat illud; in immensum tumorem substulerat qui tamen fascus lineis phlegmate vitrioli conspersis cruri circumpositis salpius renovates intra paucos dies discussus est. Vulnus ultra trimestre spatium apertum servatum dein debite clausum matronaj optima integræ sanitatē restituta et post iterum impregnata filiolarum sanam feliciter peperit servet iam porro altissimus merito charam conjugem liberis fidam matrem.”

[I am indebted to Dr. Heiberg, of Copenhagen, for transcribing the above passage from a book I have been unable to get possession of.—L. T.]

Dr. Macardle, of Washington, D.C., has favoured me with the results of his research in the same line, and these I extract in this paragraph. He has found that Nicolaus Tulpus (Obs. 44, lib. iv., "Observationes Medicorum," Amstel, 1652) relates the case of Cathalina Bonevallier, who died from "hydrops in cornubis uteri." The disease is also discussed by Mey ("Hydrops uteri tubarum"). In a "Miscellanea Curiosa" (Nuremberg, 1698) a fatal case of dropsy of the right tube in a virgin is described as having taken place in 1660, and another on p. 232 of the same work. John Baptist Branchi, in his "De Naturali et Vitiosa Generatione" (Turin, 1741), p. 187, gives an account of a case where the tube and its contents weighed eighty pounds, and Mummicks ("Bibliotheca Anatomica," vi., p. 624, Utrecht, 1697) relates a case of hydrosalpinx where the cyst and the contained fluid weighed 112lb. (I think there can be no doubt that these two cases were really cases of parovarian cysts, with the tubes drawn over them and hypertrophied, as we often see them. We can easily imagine a seventeenth-century observer doing as I have known one in the nineteenth century doing—mistaking such a cyst for an ovary or a tube distended).

It was not, however, till Astruc wrote (1761—66) that any serious attention seems to have been given to diseases of the Fallopian tube, and it is not a little curious that what he says about them is more extended, more accurate, and far more useful than what he says about diseases of the ovaries. He describes hydrosalpinx, pyosalpinx, and tubal pregnancy with perfect accuracy. He says, "It may happen that the fecundated egg may stop in the tube, and fix itself there and grow till it lacerates the tube and kills the mother." This sort of pregnancy in the Fallopian tube, he says, is not rare. He quotes de Graaf also, to the effect that the fringed edges of the tube may be found fixed to the ovary, producing sterility. He makes this most striking statement about the tubes—a statement which has lain dormant till its truth and importance have been sustained by my own clinical work and the pathological researches of Kingston Fowler, Lewers, and Grigg:—"It happens, therefore, constantly, that there are found in the opening of dead bodies illness and disorders (of the tubes) of which there was not the least suspicion. The ignorance of the patients concerning the greatest part of the diseases of the Fallopian tubes saves them the uneasiness they would have if they were better informed, and the physicians the necessity of judging of the consequences of those disorders." Then comes a sentence, *written in or about 1750*, which I commend to the careful attention of Mr. J. E. Burton, of Liverpool, who recently made some wholesale statements about these diseases at the International Congress at Washington, proving only that he had seen little and knew nothing of them. "It is only known in theory that the

inflammation commonly terminates by the way of resolution, which leads to a recovery; whereas those of abscess and gangrene are always fatal. The dropsy of the cavity of the tubes makes a slow progress, and the patients bear them a long time." When speaking of tubal pregnancy I shall have to revert to Astruc's accurate observations on the organs of Fallopius.

It will be seen, therefore, that our fathers knew a great deal more than we have forgotten, and it is strange indeed to hear our modern critics declaring to be untrue the facts recorded in the pages of Astruc, merely because they have been revived since 1872. Up to that year many allusions to the facts of tubal disease may be found in the pages of a great number of writers; the diseases are accurately described and beautifully figured, but nothing was done for them—so great was the traditional terror of the peritoneum. Even Blundell merely says: "The Fallopian tubes may be dropsical, scirrhus, affected by extra-uterine gestation, and so on, and they may be dismissed without further remark."

Like the uterus and ovaries, the Fallopian tubes are subject to errors of development and other malformations, though very little is to be found in the literature of gynecology on this point. The only special notice of malformation of the tubes which I have found is the occurrence of a second fimbriated ostium about an inch along the tube from its outer extremity. This peculiarity I have twice met with. I think it can have the significance of a curiosity only.

The malformations which have most interest for us are those resulting from arrest of development, and are parallel to those of the uterus and ovaries, though by no means always coincident. Thus we may have a small infantile uterus, or even a uterus so small as hardly to yield more than a mere representation, and with it there may be large normal tubes and large normal ovaries. We may have, on the contrary, a normally developed uterus, furnished with tubes which are mere threads, associated with little shrivelled ovaries. When the tubes are badly developed the ovaries are so generally too, but not invariably so. When the ovary of one side (or of both) has not been developed, the uterus being normal, a curious condition is met with, which I have not yet seen described, but which I have often seen in operating. From the uterine cornua the tubes depart in a normal condition of size, direction, and relation to other structures. But before they have gone far the folds of the broad ligament separate, its ridge gets lowered and flattened, and it finally gets lost in the walls of the pelvis. The tube (or tubes) is lost in the ordinary widening of the broad ligament, and no ovary (or ovaries) is to be found.

In the great bulk of such cases it is reasonable to suppose that no trouble exists save sterility in such as have married. But in

some cases the sufferings are so great as to call for surgical interference, and a typical case of this kind was placed under my care, as almost the last act of his life, by my lamented friend, the late Dr. Angus McDonald, of Edinburgh. The details of this case possess such extreme interest that I must give them in full.

During a visit to Edinburgh at the end of 1885, and whilst the guest of the late Dr. Angus McDonald, he told me of the circumstances of an operation which he had performed the preceding September on a young lady for severe pelvic pain, intensified at each menstrual period. He had endeavoured to remove the appendages, but had failed to remove them on one side, and the result was that the sufferings of the patient had been materially increased. He asked me if I would undertake the case, with a hope of my being able to find and remove the appendages which he had failed to find. Within a few weeks of our conversation most unfortunately his fatal illness attacked my lamented friend, and the further communications concerning the case were made through Dr. N. T. Brewis, of Edinburgh, from whom I received on March 5th, 1886, the following letter:—“The late Dr. Angus McDonald, to whom I acted as assistant, opened the abdomen of a young lady last September with the intention of removing the uterine appendages. He succeeded in removing those of the left side, but unfortunately could not find the right ovary. So, most reluctantly, he had to close the wound without completing the operation. The patient's symptoms had been chiefly right-sided ones—pain in the region of the right ovary, and pain passing down the right leg. I need not say that the unfinished operation did not relieve the young lady, and that after the operation she felt no better than before it. She went to Clifton a few months ago, and I have written to her strongly advising her to consult you. I have a letter from her to say that she will do so, and I now take the liberty of writing to you to ask if you will see the lady, and advise, or operate, or do anything you think suitable for her. If you will be so good as to take up her case, will you kindly write her and make arrangements for her seeing you?” I communicated with her, and had a long letter from the patient's mother, giving a lamentable account of her sufferings. The patient was entirely unable to walk, could not even be driven in a carriage without intense pain, and when I saw her every feature of her face confirmed a belief in the reality of her sufferings. These had without doubt been increased by the incomplete operation in the previous September. I visited the patient at Clifton on the 14th of March, 1886, and arrived at once at the conclusion that nothing short of removal of the body of the uterus would be of any avail. I found that the patient's symptoms had been added to by a fresh complication of menorrhagia, that since the operation in September the amount of the monthly loss had been increased,

and with it her sufferings had been intensified. On examination it was quite evident that the fundus of the uterus was very large, and was pulled down to the left side. I reopened the abdomen and found the condition as Dr. Angus McDonald had told me. A puckered spot on the left broad ligament, from which he had removed the uterine appendages, was perfectly apparent, perfectly healthy, and no trace of ligature could be discovered. On the right side the tube could be felt on the cornu of the uterus, going into the broad ligament, and then the broad ligament opened out and was flattened downwards, and was lost in the wall of the pelvis. No trace of any ovary could be discovered on that side at all. I pulled the uterus well up out of the wound, dissected out from the incomplete right broad ligament the Fallopian tube as far as it could be felt, and then separated the body of the uterus from its secondary textures. I passed a ligature through it, well down towards the cervix, and tied it by the Staffordshire knot, and then cut away at least two-thirds of the organ. The patient made an easy recovery.

In the wall of the uterus I found a small myoma, not much bigger than a filbert nut. The growth of this after the first operation is remarkable, and no doubt its presence explained the increased suffering and increased menorrhagia. The Fallopian tube on the right side was found on the cornu of the uterus, perfectly normal in appearance and structure; then, as I have already said, it became lost in the cellular tissue of the broad ligament.

The subsequent convalescence of the patient was extremely slow, for at the end of the year, after several months' residence in the Riviera, she had made much less progress than I anticipated. She was able to walk (which she had not done for many months before the operation), but not for more than ten minutes at a time. She suffered intensely from cold, her mother said her circulation was extremely bad, and that she literally was never warm. She got an idea that she would like to go to India, where she had a brother, and with this proposal I quite agreed. Up to this time there was still an appearance of menstruation, but irregularly, more scanty, and relatively devoid of pain. She has now excellent health, and is able to play lawn tennis. Menstruation has entirely ceased, and she is quite free from pain.

From this point it seems to me it will be most convenient to discuss the changes effected by disease in the tubes and ovaries together, for in the consideration of the first pathological process we have to investigate—that due to inflammation—the two uterine appendages are so inextricably related that it is not possible in the majority of instances to separate them, and even when they are not simultaneously affected the severance seems to be more due to the arrest of the process at some particular stage than by intrinsic difference in its origin.

The accession of puberty alters the nutrition of the ovary to the extent that, at the monthly periods, it shares in the general state of hyperæmia and excitement then common to all the sexual organs, and the whole economy seems to participate in the disturbance. Normally, this change takes place in the fourteenth or fifteenth year of life in this country; at an earlier date in hot climates. In strong, healthy girls, especially those engaged in active out-door work—still more those living a life approaching to the primitive state—the moliminal change is effected without suffering; but in girls brought up in refinement, of delicate habit and strumous parentage, there is much trouble. As a rule this seems to be due to the onset of menstruation and the other signs of the change while the uterus is still in its infantile or incompletely developed condition; that is, whilst, according to Johnstone, its adenoid tissue has not been developed, and is yet incapable of giving attachment to a fertilized ovum and forming for it a placental organ, even though for a long time the ovary has been matured and has been shedding completely organized ova. We may take it, also, though this point still requires much elucidation, that the undeveloped tube is still incapable of the movements which subsequently constitute its chief function. In such cases we find that the menstrual flux comes on either at irregular times or in insufficient quantity; or that, if it comes regularly, it is overabundant, and it is always accompanied by severe pelvic pain.

There is a large class of ovarian disease due to altered hæmic nutrition of the gland, which clinical experience proves to be far more common than pathological investigation has yet shown. Of the prime factors in these cases we are as yet comparatively ignorant; but the opportunities now afforded us of seeing the actual lesions of the ovaries, in those cases where they are removed for diseases other than large cystoma, are rapidly opening up some of the most difficult questions of ovarian pathology. Until ten years ago, when our success in ovariectomy induced us to extend our efforts in abdominal surgery, we knew no more of those obscure diseases of the ovary which make the lives of so many women burdensome than was afforded by the evidence of a few stray post-mortem examinations. As the clinical histories of the cases in which these examinations were made were usually entirely absent, it is not surprising that we knew little or nothing of the pathology of the ovaries, save in the instance of cystoma, and even there our knowledge was faulty.

So far as my own experience goes, I think I can now say with confidence that I know a great deal more than I did ten years ago, not only of the physiology and pathology of the ovaries, but how to cure the sufferings inflicted by their diseases.

I propose to retain the division of the diseases of the uterine appendages due to alteration in the hæmic nutrition which I

introduced nearly sixteen years ago, and therefore I divide them into five groups, differing probably only in degree of severity, save in the cases where acute ovaritis has a specific origin. They are: 1, ovarian hyperemia; 2, acute ovaritis; 3, chronic ovaritis; 4, acute salpingitis; 5, chronic salpingitis.

It may seem a metaphysical refinement to make a distinction between ovarian hyperemia and ovaritis, but I have long satisfied myself that it actually exists. Ovarian hyperemia must arise in a variety of ways, for we certainly see it in a variety of conditions, and we see it in many instances wholly apart from any similar affection of the uterus or tubes, though this is not common. In the chronic hospital uterus (p. 125) the tubes and ovaries are alike affected, as we might expect. In cases of infantile uterus, where the sufferings are so great that we have to interfere surgically, it is not unusual to see immense congested tubes associated with a uterus one-half or even one-third its normal size. In such cases it is not an unreasonable supposition that the arrest of development of the uterus, and the consequent arrest or diminution of the menstrual flow, affects the uterine appendages by an increased supply of blood, and brings about the hyperemia, which is probably the immediate cause of the intolerable suffering the patients have to undergo.

It is also seen when the uterus is normal and in virgins, the ovaries being increased to three or four times their normal size and lying prolapsed, as it is called, in Douglas's pouch, but quite free from any change such as may be attributed to the inflammatory attack. In such a form it is far from being a rare affection, and is invariably well marked in its history, the chief detail of which will generally be found to be menorrhagia. In a typical case which I had some years ago under my care, the following is a summary of the facts:—The young lady is the child of parents of markedly nervous temperament, is well-grown—I might almost say prematurely developed in every way—and when little over thirteen began to menstruate. From the beginning her periods were profuse, and at first painless. She enjoyed excellent health for many months after the accession of menstruation, during which time the flow continued profuse, generally lasting for six days or a week, and necessitating the use of from four to six napkins daily. By the time she was fourteen it was, however, evident that her health was suffering. She became listless, sleepy, fainted when at her lessons, gave indications of loss of memory, and, when I first saw her, she was decidedly anæmic. At that time it wanted but two or three days before the accession of her period, and steady pressure over the ovaries gave her great pain, which she described as turning her quite sick. During menstruation this pain was induced by less pressure, but in the intermenstrual period it could not be produced at all. She always seemed better in health during the flow, and

it was this very common peculiarity that prevented her parents from applying earlier for the much-needed advice.

In such a case there cannot be a doubt that there is hyperæmia, not only of the ovary, but of the whole sexual apparatus, due to, it may be, or more probably only accompanying, the increased uterine activity. This of itself is not a source of danger, for that lies in the menstrual loss producing anæmia. The case I speak of I watched for a number of years, and I finally succeeded in effecting a complete cure. I had many difficulties to overcome, however, in this, for I was a long time in convincing the parents of the young lady of the necessity of rest, the great requirement in such a case. She was sent to school at the age of sixteen (1884) against my urgent protest, and it was only when the mischievous results were apparent after a year's trial that she was resigned to my care without cavil. The mischief effected in school was arrived at in two ways: she was not allowed to have the absolute rest in bed and freedom from lessons during the menstrual week which were absolutely necessary, and she was dosed with iron by an inexperienced and somewhat obstinate practitioner, whose only notion about the diseases of female adolescents was—anæmia, give large doses of iron.

The nature of such a case indicates at once what the treatment should be. The pelvic congestion occurs only at menstruation; during menstruation, therefore, the patient must be kept in bed absolutely, and this alone will cure most of these cases. But, says the schoolmistress, "How am I to get my pupils on if they lose a week by this resting? When I was young I never got any rest, and I cannot see how girls need it now." But girls do need it now, and it is better they should lose twenty-five per cent. of their lessons than lose their health, and it is just during their school years that so many of them lose their health—and their lives too sometimes—by the reckless ignorance of their teachers. Again, iron, properly administered, is the sovereign remedy for anæmia; but not so long as there is a cause for the anæmia in existence such as hæmorrhage. Besides, if one thing seems more certain than another in my limited belief in the efficacy of drugs, it is that iron has a specific influence in producing hyperæmia of the pelvic organs. On the contrary, the salts of potash reduce the hyperæmia. Any salt of potash will do it (and the fashionable bromide need not necessarily be given) unless it upsets digestion, as most of them do. The tartrate of potash in five-grain doses, or the citrate, may be given. The nitrate of potash in half-grain doses or grain doses is often useful, as is also the bicarbonate in two grain or three grain doses. But above all I place the chlorate of potash, in doses of three to five grains, as the sovereign drug in all pelvic congestions. I think the benefit derived from it is due to the fact that it seems to be perfectly harmless, in that it interferes with no function and

brings out no skin eruption, no matter how long is administered, and it can be given in larger doses and for a much longer time than any other of the salts of kali. I have read somewhere, also, that it is not given off by the kidneys readily, and all the other salts are; and this may be the most important factor in its use. In nearly all cases of uterine hæmorrhage not dependent on such causes as polypus or cancer its use will prove satisfactory. I give it generally in five-grain doses, with a bitter infusion and two drops of dilute muriatic acid to dissolve it, combining it with ergot, if necessary, during the loss.

Concerning the further progress of such cases, I believe that their menstrual history is much the same as that of other women after they have had a child, the process of gestation seeming to rectify in great measure the abnormal excitement. If they remain unmarried, they go on suffering from menorrhagia, become extremely anæmic, and have the menopause at the usual time, but marked with abnormal profuseness, as might be expected. I have repeatedly had occasion to observe that marriage, even without resulting pregnancies, often seems to do good in modifying the monthly hæmorrhage. In other cases, however, marriage seems to make them very much worse, to induce chronic ovaritis, displacement of the ovaries, and finally to destroy the health entirely.

The treatment of such cases should, if possible, be begun in the first stage. There is no cause of deteriorated general health so certain for a young woman as profuse menstruation due to pelvic hyperæmia. The spanæmic condition induced by a few years' continuation of it is one over which iron seems to have no control; indeed, as I have said, all ferruginous preparations ought to be sedulously avoided until the menorrhagia has completely ceased.

Let me say a word or two more on the necessity of taking such girls away from school. An anæmic brain is unfit for the work of training, just as an anæmic stomach is unfit for the food which is generally the staple maintenance of schoolgirls. All mental effort should be avoided, and I desire emphatically to notice music specially, for I am quite certain that instruction in that art, as carried out in boarding-schools, has to answer for a great deal of menstrual mischief. To keep a young girl, during her first efforts of sexual development, seated upright on a music-stool, with her back unsupported, drumming vigorously at a piano for several hours, can be nothing but mischievous.

This is most pernicious, and I have repeatedly had to trace to it the existence of serious disease in young ladies. Musical exercises are especially hurtful for the further reason that music, in those who are devoted to it and gifted with its necessary peculiarities, is a strong excitant of the emotions; while to those not so gifted, and who do not care for it, musical exercises are an intolerable and useless burden. I have been delighted to find that

the foregoing sentences, taken from a former work of mine, have been quoted far and wide by scholastic and sanitary reformers, and have been notably commented on and quoted with approval by my late friend Dr. Milner Fothergill. I have, therefore, reason to insist again that absolute rest is an essential part of the treatment of the early stage of pelvic hyperæmia, and I need scarcely say that it is in its early stage that the treatment is most likely to be successful. This rest ought to be rigorously carried out by the patient being confined to the prone position for a few days before, during, and for a few days after the catamenial flow. The application of a counter-irritant over the ovarian region, just before the period, is also sometimes very useful. There is a great deal to be done in moral treatment. It may be only a coincidence, but I have noticed this affection chiefly in girls who have had no brothers, or brothers only younger than themselves; and I am quite certain that great harm is done to many girls by their rigid social seclusion, in youth, from the companionship of boys. Under proper supervision, no wrong could happen from more unrestricted association of boys and girls at their critical periods; and it seems to me that it is a mischievous plan to draw wide barrier-lines between the sexes at a time when they ought to begin to understand themselves and each other; and, by harmless intercourse many of the risks may be obviated which afterward beset them when an unaccustomed association is opened out at an age when instinct has the chief ascendancy.

While upon this subject, I should neglect my duty were I to refrain from speaking on another subject concerning the education of girls. There has grown up a desire to educate women in exactly the same way and to the same extent as men. It would be easy for me to show, were any charge of obstructiveness or want of liberality likely to be made against me, that throughout my public life I have ever been in the front rank of those who advocate perfect freedom of every kind of instruction for every one who may desire it; and I have been particularly strong in the expression of my views that there should be restriction of neither class nor sex. But it is useless to disguise the fact that, inasmuch as women have functions to fulfil which men are free from, it is not to be expected that women can, with safety, do the work of men, and at the same time properly fulfil their own special functions as women. It appears to me to be growing more and more apparent every day that some of the questions raised by the advanced advocates of women's rights are to be settled, not on the platform of the political economist, but in the consulting-room of the gynaecologist. This is no place to air political crotchets, but I may own myself an advanced advocate of women's rights; at the same time, I cannot help seeing the mischief women will do to themselves, and to the race generally, if they avail themselves too

fully of these rights when conceded, It may be, and probably is, a very gratifying circumstance for a young woman to go to a college, and show that she could take as high a degree as a man; but, considering the fact that she has a monthly disturbance, she would take this degree at a price which a man would not have to pay for it. To fulfil the necessary conditions she will tax herself to such an extent as will, in all probability, make her functions imperfect. To continue the career begun at college, she must deny herself the congenial occupations of a wife and the pleasures of maternity, and thus she robs the human race of what it wants most—brain-power on the part of the mother. To leave only the inferior women to perpetuate the species will do more to deteriorate the human race than all the individual victories at Girton or Newnham will do to benefit it. This over-training of young women is wholly unnecessary in the interests of human progress, and it is mischievous alike to themselves and to humanity. To hear an elderly maiden lady read a learned paper on mathematics may be a gratifying experience, but it is largely qualified by regrets when we speculate what superior children she might have produced if she had been a little less learned in books. Those who advocate the equal treatment of the sexes must bear in mind that great culture in a man does not unfit him for paternity, but, on the contrary, will help him, in the struggle for existence, to maintain a family. For women, on the contrary, exceptional culture will have infallibly the tendency to remove the fittest individuals, those most likely to add to the production of children of high-class brain-power, from out of the rank of motherhood.

All the cases of pelvic hyperæmia which I have met with at puberty have yielded to the treatment I have detailed, when it has been fairly tried; and many cases which I have had reason to regard as of this nature, but in a later stage, have been benefited by it. It is, however, in the perfect fulfilment of the function of the utero-ovarian organs, followed by a complete and perfect involution, that we have the radical cure.

Pelvic hyperæmia is sometimes met with as the result of marriage, especially when the marital acts have been indulged in to excess, and particularly when pregnancy has not resulted. This, in fact, is only the mildest form of a serious disease which may end in total inflammatory disorganization of the ovaries of newly-married women. It is not unusual to find a delicate woman, who had menstruated normally previous to her marriage, suffer from severe menorrhagia for the first three or four years of married life, and to find an explanation of this in the vigour of the husband. In these cases tenderness in the region of the uterine appendages is always present, and very frequently there is violent pain and tenesmus, lasting for hours after connection, so that soon the unfortunate sufferer dreads the idea of a marital embrace. The

menstrual period becomes prolonged, so that there is left only an intermenstrual interval of a few days. In prostitutes of a tender age this affection is of extreme frequency, and often ends in the chronic inflammation of the appendages, with adhesion of the Fallopian fimbriæ to the ovary, and the subsequent atrophy of all the sexual structures so often found in their bodies. The recurrent inflammatory attacks thus induced in these unfortunates have been termed *colica scortorum*. The cure depends, of course, on the removal of the exciting cause and the employment of such treatment as has been before alluded to; but in severe and protracted cases it will be effected only by removal of the ovaries and tubes.

The pathological appearances in such cases of ovarian hyperæmia as are so severe as to require operative interference are very characteristic. The ovaries are very large, and their normal pearly-blue colour is replaced by a pinkish tinge and œdematous appearance. The pedicles are increased in length and the pampiniform plexus exaggerated, and the organs are always found lying close behind the uterus, that organ being generally folded back over them. They are studded with minute cysts quite like boiled sags.

We come now to speak of changes effected in the uterine annexa by a distinctly inflammatory process. I ought here, of course, to discuss and advocate some theory of inflammation—at least to attack and abuse someone else's theory, if I cannot support one of my own. But I shall do nothing of the kind, for, so far as I have seen, every theory of inflammation is like the dog in Hamlet's speech—it will have its day. The present fashionable theory is that everything has its origin from microbes, and these are twisted about to explain the inexplicable. I shall have more to say on this subject by-and-by; merely let me say now that in my short time I have learnt (and have unlearnt) six different theories of inflammation. Every one of them has been as violently supported as the microbe theory, and five of them have gone the way the microbe theory is going. We know enormous numbers of valuable facts about the inflammatory process, but a satisfactory theory of it we have not.

Of one thing we are certain—our fathers knew all about it, and we are now no wiser—that the process may be practically divided into three stages: (*a*) congestion, (*b*) exudation, and (*c*) resolution or suppuration. These are old-time terms, and most unfashionable in the present day, but they express facts, and are wholly independent of ridiculous and ephemeral theories.

I have described hyperæmia of the appendages, and it seems to be more a passive than an active condition, though there can be no doubt it may pass over—and the bridge is a short one—into the process of inflammation. In such a case we need not assume that

the secondary process has any specific origin such as is now claimed for everything, with a "cocculus" to match, any more than we must assume that a chronically inflamed knee-joint, in which the acute process is set up by a trifling blow, has had a "cocculus" infused thereby into it.

But there are specific inflammations of the uterine appendages due to specific causes, and of them we may at once speak; the first in order, merely as a matter of convenience, being that to which I first drew attention sixteen years ago—the exanthematic.

It has long been known that in certain zymotic diseases, especially in mumps and scarlet fever, male children are apt to suffer from orchitis, and I remember seeing a statement somewhere that such inflammation of the testicle was likely to be followed by atrophy and loss of its function. I cannot, however, verify my recollection by producing the reference. Dr. Macfie Campbell, of Liverpool, in a letter dated October 26th, 1883, gives me the following case:—"I attended in April, this year, a young lad of about fifteen, for mumps, coincident with which he had double orchitis, the left testicle, as usual, suffering most severely. The swelling subsided without much difficulty; in fact, the attack was a mild one. But a few days ago he came to show me the left testicle, which he thought was 'shrivelling up.' It was infantile in size—less than half the dimensions of the right, and the scrotum had an unusual appearance, due to the fact that the right side was much the more dependent."

In 1870 and 1871, and still more in 1874, my attention was drawn to the occurrence of acute pelvic peritonitis in women after attacks of scarlet fever and smallpox, these attacks leaving indications which showed clearly that the mischief began in the ovaries. Accident enabled me to trace the subsequent history of two such cases, and I found that in both the menstruation became greatly diminished in amount, that it was accompanied by severe dysmenorrhœal symptoms, and that in one of the cases it entirely disappeared. From these cases I began to suspect that the attacks were primarily due to inflammation of the uterine appendages, and that this had some kind of relation to the zymotic diseases which preceded it.

The terrible outbreak of smallpox from which this town suffered between 1872 and 1874 gave me the opportunity of following out this line of research, and in the second edition of my Hastings Essay on the "Pathology and Treatment of Diseases of the Ovary" I sum up my conclusions upon this subject, and up to the present time I have seen no reason to modify them:—

"The occurrence of acute ovaritis in certain of the exanthemata, or as a sequela to them, has never yet, so far as I know, been placed in sufficient prominence. I have already alluded to it, but I wish here to record further experience gained from an

epidemic of smallpox of considerable severity, which existed in Birmingham from 1872 to 1874. Though practising exclusively as a gynaecologist, it is somewhat curious that I was called in consultation to four cases as instances of pelvic ailment which ultimately proved to be cases of smallpox. One of these gave the clinical features of the exanthematic ovaritis with great clearness. She had been married four years, and had been confined twice. She was pregnant for the third time in September, 1873, when she was seized with a sudden rigour, followed by severe pyrexial symptoms. These rapidly became localized in the pelvis, the patient complaining of excruciating pain in each iliac fossa. I saw her on the fourth day of her illness, and found her suffering from double acute ovaritis and threatening abortion. She aborted on the fifth day, and then showed a papular eruption of smallpox, which rapidly became confluent. She made a very protracted recovery, and has never menstruated since. The fundus uteri is fixed down on the sacrum, and both ovaries are enlarged and tender, the left being firmly fixed alongside the uterus. (I have repeatedly seen this patient since, and up to the present date [1887] the menstruation has never returned. The uterus is perfectly senile, retroverted, and fixed by adhesions. Her health, however, is good, and she has suffered no inconvenience since the cessation of the premature climacteric which she went through. There can be no doubt that the third stage of her pelvic inflammatory trouble passed through mere resolution into atrophy of all the organs concerned.)

"In hospital practice I met with a large number of cases, of which the following is a good example :—H. A——, aged twenty-two, began to menstruate a short time after she was fourteen, and was quite regular till August, 1872. At that time she had an attack of smallpox, which she says was not severe, and which has not left any deep marks. Up till the time of that illness she was strong and robust, and never knew what illness was. During the attack she had a very profuse menstruation at an irregular time, and this was followed by severe abdominal pain, which was treated by hot fomentations. She did not get rid of this pain entirely for some months, and since then she has menstruated at long intervals, the discharge being very scant, and accompanied with great pain. She is now very anæmic, though still stout, is short of breath, and has a loud systolic hæmic murmur at the base. The ovaries are not to be felt at all, and therefore it is probable that they have become atrophied. She obtained considerable relief from small doses of iron, combined with chlorate of potash. I have no doubt that she had an attack of acute exanthematic ovaritis, which has led to atrophy of all the organs.

"I have repeatedly seen, on post-mortem examination, cirrhotic atrophy of the tubes and ovaries in women who had by no means

reached the usual climacteric period of life, but had prematurely ceased to menstruate. In one case only could I get a history of the menstrual life of such a patient, which was to the effect that she had not begun to menstruate till twenty years of age, and had ceased before she was thirty; and about that time she had an illness, which probably was scarlet fever. The ovaries were adherent, small, and shrivelled, and a stained section showed that nucleated and banded fibres constituted the bulk of the glands. Here and there, in small loculi whence the bands seemed to radiate, a small group of cells served to indicate the site of a Graafian follicle, but no perfect follicles could be found. This extreme instance was the result, probably, of two factors—insufficient development and exanthematic atrophy. I think that in such cases it is likely that future observation will establish the existence of an interstitial oöphoritis, distinct in character, and perhaps in origin, from the ordinary acute inflammation of the peritoneal covering of the ovary, to which latter we might more appropriately give the name of peri-oöphoritis. The results in the two classes seem to be different, for in the second menstruation does not seem to be suppressed, but, on the contrary, it is sometimes excessive; while, as a result of the supposed interstitial form, we have ovarian and uterine atrophy and amenorrhœa of an incurable form, and, when it occurs in puerperal women, superinvolution of the uterus.” *

The views I have expressed in these sentences have now been fully confirmed by my own experience and further investigations, and I have no doubt now that there is a special form of oöphoritis associated with certain exanthemata, more particularly scarlet fever and smallpox, and that in its results it differs altogether from the form of ovarian inflammation to which I prefer to give the name of peri-oöphoritis. We certainly find it in the special kind of adhesion with a retroverted and fixed uterus, and a subsequent atrophy of all the organs, which are not characteristic of the specific puerperal forms to be afterwards described; and in these latter we do not get the cirrhotic change in the ovary which marks the progress of the exanthematic inflammation. We rather get suppurations of the ovary, inflammatory cystic formations, and chronic hyperplasia, even when the disease has become quiescent.

The most important result of this specific form of ovarian inflammation is that which leads to a cirrhosis of the ovary, which may or may not be characterized by general atrophy. It always is indicated, as I have said, by atrophy of the true gland-structure

* It is not to be supposed for a moment, however, that the uterus ever can be so absorbed as to disappear altogether, even though it may be so thin that a sound can be passed through it, as in the case recorded in the *British Medical Journal* for 1872, p. 408, by Mr. Whitehead, of Manchester. At p. 465 of the same volume I offered more feasible explanation, that there had been formed a metro-peritoneal fistula.

and excess of the fibrous element. How this may be brought about is not yet clear; but, as I shall show immediately, the facts are fully established, and my own explanation is that it is due to the absorption of the gland-elements after the inflammation, while the fibrous elements are left, just as is said to occur in the contracted kidney and in other instances of cirrhosis.*

Similarly, the tubes become adherent by the inflammatory exudation, and they also undergo subsequent atrophy. They are not generally occluded, but sometimes they are, and are occupied by a small amount of serum. I have never known pyosalpinx have an exanthematic history. Whatever be the process, there is no doubt that it is not unfrequently associated with atrophy of the uterus, resulting in what is known, and was first described by Simpson, as superinvolution of the uterus. (*Vide* p. 133.)

One case which I may now refer to is of so much importance that, at the risk of being tedious, I shall give its history fully from my first acquaintance with the patient. The former part of the case I take from the *Obstetrical Journal* of May, 1873.

"E. E——, aged thirty-five, came under my care in November, 1871, at the hospital. She had been married twelve years, and had two children, the last of which was born seven years ago. She had scarlet fever after this labour, and the menses were long in reappearing. When they did come they were scanty and very painful, and occurred irregularly at intervals of from five weeks to three months, lasting only one day, or two at most. About four years previous to her first visit, slight attacks of an epileptiform nature occurred at each period—almost imperceptible at first, but getting gradually worse as the periods got more irregular and scantier. For some months previous to applying at the hospital she had two or three severe fits at each period, each fit leaving her insensible for some hours, and often with severe injuries. On November 5th she had had a period and a very severe fit; 9th, ordered five-grain doses of the bromide of potassium thrice daily, and an aloes-and-iron pill twice a week. Examined on the 16th, and found the uterus quite infantile; ovaries normal. The uterus was so small that I failed to get anything into its cavity. On the 30th I doubled the dose of the bromide. December 7th, menstruated for one day, and had increased flux and no fit. Menstruated January 4th and 5th, with slightly increased amount, and one severe fit on second day. Had

* Dr. Saundby, pathologist to the Hospital for Women, who has given much care and personal work to this subject, tells me that it is still a *questio vexata* of pathology how far the connective tissue of cirrhotic organs is derived from retrogressive transformation of the pre-existent more highly organized elements—*e.g.*, glandular epithelium, &c.—into spindle cells and fibres, and how much is due to cell-migration from the blood-vessels and proliferation of the connective-tissue corpuscles. It is probable that the first of these processes plays a more important part than has been assigned to it in the doctrines which have found most favour during the past few years.

a severe fit on 22nd, without any menstrual flow—the first time this has happened. Menstruated February 1st and 2nd; no fit. March 11th and 12th, menstruation without fit, but a severe seizure occurred almost immediately after the flux ceased. On the 18th Mr. Jordan kindly put her under chloroform for me, and I got a small tangle-tent into the uterus. I at the same time discovered that there was considerable ante flexion. March 25th, passed in No 8 tangle-tent, and on the 29th I got No. 8 galvanic stem in. April 5th, got in No. 12 stem; 7th, 8th, and 9th, menstruated more profusely than she has done for years, and without a fit, though one occurred on the 16th. She still wears the stem, and menstruates regularly and profusely, but has no fits."

From this point I continue the case from the hospital record.

On April 26th, 1873, I introduced No. 16 galvanic stem, the largest I have ever used, and from May 3rd to 7th she had a period more profuse than she had ever had since her confinement. On June 4th she again menstruated for four days, again in July, and also in August and September, during which time she wore the large stem, and had not a single fit.

The stem was removed at the end of September, having been worn five months with most satisfactory results. In November, she menstruated for one day only, and in December there was no appearance of it at all, but a fit occurred at the time it was expected. During the whole of this time she was taking sixty grains of the bromide each day. The fits recurred at each period when menstruation ought to have appeared, so that on May 16th I had recourse again to the galvanic stem. She menstruated from the 20th to the 24th without any fit, and she wore the stem with only very occasional fits, and with perfect and regular recurrency of menstruation, till November, when the stem was removed. By the following March, 1874, the fits had reappeared, and the menstruation was again in abeyance, and just as it disappeared the fits were re-established.

During 1875 I saw her only occasionally, as it was only when she was worse than usual that she came for the bromide mixture. It was quite clear then that her mental qualities were becoming dulled, and she was rapidly taking on the characteristic face of an epileptic imbecile. During 1876 another effort to re-establish the periods by means of the galvanic stems was made, but with results less satisfactory than those made in previous years. On February 5, 1877, I was asked to see her at her own house, and found her in a condition of epileptic mania. I advised her removal to an asylum, but her husband and mother declined to act upon my suggestion, despite its being quite evident to them that the injuries she inflicted upon herself during the fits were of so serious a character as to endanger her life, and from her occasional violence during her delirium it was quite possible she might become a

homicide. Every month the fits returned with increasing severity, and the attacks of mania fastened themselves almost wholly upon the week during which a slight loss, lasting for a few hours, indicated that the menstruation should have occurred. The bromide of potash was pushed to as much as two hundred grains a day without the slightest effect, and other drugs were tried equally without avail.

In July, 1879, her condition was so dreadful that her friends at last determined to send her to an asylum, and I saw her on the 28th. She was almost completely fatuous, her memory was almost gone, the fits seemed to miss only one week in four, the attacks of mania were irregular and continued for varying periods, and menstruation occurred at irregular times. Yet, on the whole, it was said by her mother that she was at her worst very regularly one week out of the four.

It occurred to me that, if my view were correct that this was a case of menstrual epilepsy really depending upon exanthematic cirrhosis of the ovary, removal of the ovaries held out some prospect of curing this unhappy woman. At least it could not make her worse than she was, for, even if she died under it, the release would be a grateful one to all concerned. Her relatives, therefore, gave a ready consent to my proposal when I laid it, and the reasoning upon which I based it, before them.

I therefore admitted the patient to the Women's Hospital, and, with the concurrence of my colleagues, I removed the ovaries on August 11th.

The operation in the case of E. E—— was made somewhat difficult by her being extremely fat. A somewhat profuse catamenial flow set in on the third day after the operation, and lasted for three days, but without the slightest appearance of a fit. This pseudo-menstruation is very common after ovarian operations, and often recurs for two or three months after removal of both ovaries.

The stitches were removed on the 18th, and she sat up on the 23rd of August, twelve days after the operation.

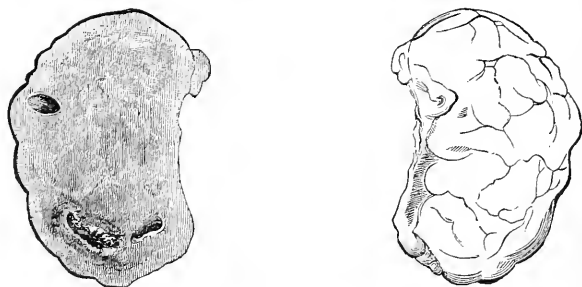


FIG. 49 —Exanthematic cirrhosis of ovary.

I went away for my holiday, and did not return till the 29th of September, when I found her an altogether different woman. She had had no fits, no more menstruation, was bright and cheerful in her face, her memory returning, and she had altogether lost the dull, heavy, epileptic look which she had before.

I last saw her on October 13th, when she was about to go to her home in Peterborough, and she and her friends were satisfied as to her perfect recovery, and were as grateful as people could be for the improvement in the patient's condition.

The description of the ovaries by my friend, Mr. Alban Doran, completely justifies my view of the pathology of the case, and my treatment is but a logical conclusion from that view. After such an operation one would expect that the fits would continue for a few months, and gradually disappear. But here they have disappeared at a blow, and, after nearly three months' absence, I think they may be expected to have finally disappeared.

The ovaries removed were not much smaller than normal ovaries, but they were fissured in a most remarkable manner, so as to resemble in miniature the kidneys of an ox, or the convolutions of the human brain. I sent one up to the College of Surgeons' Museum, and I quote from Mr. Doran's report upon it, as follows:—

“There are no signs of ‘alveolar degeneration,’ but the elongated cells of the stroma are larger than in normal ovaries, and

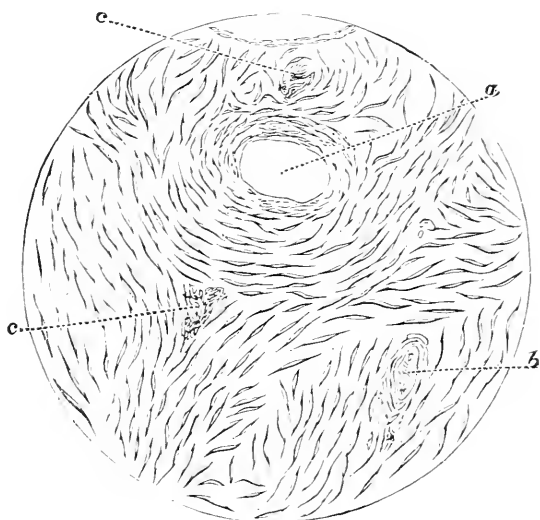


FIG. 50 (drawn by Mr. Alban Doran) —Microscopic appearances of cirrhotic ovary, magnified 250 diameters: *a*, normal arteriole; *b*, small vessel occluded; *c, c*, debris, probably site of vessels occluded by pressure of new cellular tissue.

there are few vessels; the hypertrophy of those that remain, and the bundles of fibrous tissue, point to a cirrhotic change following the exanthematic oöphoritis. There were no morbid cysts, nor extravasation of blood; no pathological breaking down. There were two Graafian vesicles, each about one-twentieth of an inch in diameter, both close to the surface, the periphery of the ovary being slightly denser than the deeper stroma, to the depth of one-eighth of an inch. Near the inner extremity of the ovary is a menstrual corpus luteum which makes a distinct bulge on the surface."

As I have said, the appearances presented by the pelvic organs in these cases of advancing atrophic change of the uterine appendages, and subsequently of the uterus itself, due to exanthematic oöphoritis and peri-oöphoritis, are very characteristic. The uterus is infantile (or really prematurely senile in many cases), generally retroverted, sometimes also retroflected, and fixed in its abnormal position by adhesion. The ovaries are always adherent and shrivelled, and the tubes correspondingly altered. Bands of adhesion exist between these organs and other pelvic (and even abdominal) viscera. The story is always one of protracted suffering, unless the atrophic change goes so far as to arrest menstruation completely—nature's own cure. In cases where the conditions justify it, after mature deliberation, I am sure that in the operation for the removal of the uterine appendages we have the means of alleviating an enormous amount of suffering of an otherwise incurable kind.

The conclusions which I have made concerning the influences of exanthematic diseases upon the ovaries have already been confirmed by many interesting observations, chiefly by Dr. Lebedinsky. In the specimens he has examined during the actual process of inflammation, he describes the microscopic appearances as unchanged both on the surface and in section. He examined the ovaries after having hardened them in Müller's fluid, and afterward in alcohol and picric acid. He found, on section, that all the Graafian follicles were in a condition of parenchymatous inflammation, which commenced in turbid swelling of the epithelium, and proceeded to the complete destruction of the cells. The ovarian stroma was not affected beyond being hyperæmic in the neighbourhood of some of the follicles. He found the destruction of the glandular tissue most marked in the case of a girl eight years of age, who, during her convalescence from scarlet fever, was attacked by measles, of which she died on the eighth day. The great majority of the follicles in the ovaries of this patient were occupied by a finely-granular structureless material, and in the cortical layer the follicles seemed to be almost entirely destroyed. Lebedinsky regards this affection of the ovaries as being quite analogous to the well-known parenchymatous inflam-

mations of other organs during the progress of infectious diseases. The result is a destruction of a larger or smaller number of follicles, and the consequent interference with the subsequent function of the ovaries in corresponding degree, so that the fecundity of the infected person will, in severe cases, be rendered extremely problematical, and this will be a certain result if the tubes are also found to have been damaged. This is the case in by far the larger number of cases, and the tubes share in the general atrophy of the parts in the subsequent cirrhotic change.

As I have already indicated, chronic ovaritis may be a later stage of moliminal hyperemia. It may also be the result of acute ovaritis; but the majority of the cases occur from sexual excess and masturbation, or as a sequela of exanthemata and rheumatic fever, and probably of syphilis. I have once had the opportunity of dissecting a case where I had recognized chronic ovaritis in life, and then it certainly was the result of acute rheumatism. It occurred in the case of a girl seventeen years old, who had suffered from eight or nine attacks of rheumatic fever. In two of them she was under my care as a dispensary patient; and after the recession of the articular affection an attack of pelvic pain came on, which was increased by pressure, and the attack was accompanied by an irregular menstrual flow. The whole passed off in a few days after the application of a blister, but ever afterward her menstruation was irregular, profuse, and painful, and she suffered more or less from the symptoms I shall describe immediately. I regarded the attack as one of mild acute or subacute ovaritis, followed by a chronic stage. She died subsequently of embolism of a cerebral artery, and I found her ovaries large, soft, covered with lymph, and dotted with enlarged follicles, and the peritoneum was thickened around them. The left ovary was partly adherent to the rectum, and it had nearly the whole of the fimbriae of the corresponding tube glued on to it.

The following case illustrates the same lesion in a more chronic stage of its progress:—

H. B——, aged thirty, was placed under my care in September by Dr. Bradley, of Dudley, who told me that when she came under his care she had retroflexion and a variety of somewhat severe symptoms, including pains in the groins, extending down both thighs and into the back, which were much worse just before the menstrual period. He remedied the retroflexion by one of Graily Hewitt's pessaries, but the pains still continued as bad as before, and he sent her to me with a letter containing this sentence:—"It seems to me that, in order to completely cure her, it might be necessary to remove one or both ovaries."

The history that she gave was as follows:—Her menstruation began at the age of fourteen, and was at first regular and normal.

At the age of eighteen, while resident in Paris, she had an attack of rheumatic pleuro-pneumonia, and after that she did not menstruate for seven months. It is not quite clear, but I think it more than likely that at this time she had an attack of ovaritis, because, during her convalescence, she found that she could not for many months straighten herself on account of severe pelvic pains, which existed on both sides, and extended down the thighs, and which prevented her walking any distance for a long time. At the end of the seven months she got somewhat better, and her periods returned, but she suffered intense pain while they were on. Three years before I saw her, while resident in Poland, she had a severe attack of pelvic inflammation, which was at the time regarded as being of a rheumatic character. Since that attack her menstruation had always been extremely irregular and very painful, so that practically for three weeks in every month she had been wholly unable to do anything, or even to walk, and for two years previous to my seeing her she had not been able to follow her occupation of a governess.

I found the uterus fairly normal in position, and down behind it and on either side the ovaries could be felt, large and nodular, just like mulberries. They were extremely tender, and evidently adherent. After some further discussion with Dr. Bradley, it was determined to remove the organs, and this operation I performed on October 26, 1880. I found the ovaries adherent, nodulated, studded with minute cysts, and markedly cirrhotic; they were very friable, and their removal was a matter of great difficulty. With them I removed the adherent tubes. She recovered rapidly, but unfortunately during the process of recovery she had a hæmatocele, and though she has improved steadily since the operation, her progress has been, on account of this accident, neither so rapid nor so satisfactory as I could wish, nor as has been the rule in most of my cases. The condition of her ovaries very well illustrates the result of the interstitial form of oöphoritis which is a result of rheumatic disease.

I have had a large experience in cases which, in the first onset, are probably of a less severe kind, and in their progress they result in the deformity already alluded to, presenting therein certain very special characteristics. Early in my experience of pelvic troubles I expressed the belief that retroversion of the uterus in virginal women was very rare, and was probably always congenital. But I have had to modify this view now to a very considerable extent. I find that it is by no means so rare as I thought it was, and I am disposed now not to regard it as congenital, but as the result of peritoneal inflammation early in life. I am perfectly sure that it is generally associated with the peri-oöphoritis of exanthematic diseases. I have now had several very satisfactory opportunities of verifying this fact, and the stories

of the cases have, to my mind, thrown very considerable light over the pathology of many of our retroversions. When we find a retroverted and retroflected uterus in a young unmarried woman who has not been unchaste, we almost invariably find the uterus to be infantile in its characteristics. The cervix is small and conical, badly developed, and the whole organ is undersized. The retroversion is generally not accompanied by much flexion, but the organ will often be found to be pretty straight, lying flat down towards the rectum, and to be adherent. When curved backwards the same characters present themselves, and a pronounced degree of retroversion will be found associated with the flexion. It is in these cases that so much harm is done by efforts misdirected towards replacement of the organ. The post-mortem examination of which I speak was made, for an altogether different reason, in the body of a young lady whose history I had been conversant with for a great many years, and I knew exactly the condition of the pelvis, for which she had been under my care for a considerable time. She had never been interfered with in any way before I saw her, and she was brought to me for defective and painful menstruation. At that time she was about twenty-three years of age; she had begun to menstruate about fourteen, and when at school, at the age of fifteen, she had a severe attack of scarlet fever. There is no very clear history of attention having been drawn to the condition of the pelvis at that time, but her own story makes it perfectly certain that she had an attack of exanthematic peri-*o*phoritis. She had two or three profuse periods soon afterwards, not accompanied by much pain; but from that time her menstruation began to get less profuse until it became almost suppressed, and when I saw her first she had an occasional period at varying intervals of four, ten, and twelve weeks, lasting generally only a day or two, the flow being very scanty, and accompanied by some pain; but it was not unendurable, and never sufficient to put her off from her ordinary social duties and amusements. After conducting her case on general principles for about a year without any benefit, I advised the patient and her mother that a pelvic examination should be made, and this they agreed to. I found a typical instance of the cases that I have already spoken of. The uterus was certainly not half the size it ought to be, was curved slightly back, and quite adherent to the posterior wall of Douglas's cul-de-sac. No reasonable efforts which I could make sufficed to place it in a normal position, and the history was quite enough to call to my mind many other things I had seen of the same kind. I pronounced it, therefore, to be a case of atrophy of the uterus and its appendages, due to the old inflammatory attack which had taken place in association with the scarlet fever. I gave the opinion that no attempt should be made at local treatment, and this advice I know was followed.

On the young lady's death I obtained permission for an examination of the pelvis, and I found the conditions precisely as I had anticipated. The ovaries were small—not much bigger than horse-beans—corrugated, densely adherent, as also were the tubes, to the floor of the pelvis; the tubes were correspondingly atrophied, and the uterus itself was certainly not bigger than that of a child ten or twelve years of age. Bands of adhesions connected all these organs with the various structures, but mainly with the posterior wall of the recto-uterine cul-de-sac, so that this cavity was practically obliterated.

Dr. Littlejohn, the eminent Medical Officer of Health of the city of Edinburgh, has presented me with two other specimens, obtained in his post-mortem examinations, precisely of the same kind, and, from the appearances, having probably a similar origin.



FIG 51.—Drawing from a specimen presented by Dr. Littlejohn. This was obtained from the body of a prostitute at a medico-legal post-mortem examination *a*, bladder; *b*, fundus of uterus; *c*, tubo-ovarian cysts. These are fibrous adhesions to *d*, rectum, and *e*, small intestine.

In the Midwifery Museum of the Edinburgh University there was another specimen, to which my attention was drawn by Professor Simpson. The appearances of these preparations are

precisely such as are found in many cases where we have to remove the uterine appendages for chronic inflammation of these organs, and the history is equally characteristic of the progress of the disease. I could give a large number of instances in which the disease has gone on apparently unrelieved by the process of atrophy, stopping short of completion, and the suffering has been so great that the patients have been obliged to submit to the removal of the affected organs to enable them to carry on their ordinary lives as members of society. In other instances it is certain that marriage has made them very much worse, and many of my cases have been clearly at the beginning cases of cirrhotic, atrophied, and adherent appendages excited into fresh trouble by married life. Others have had a much more dramatic history, for, having fallen into the hands of enthusiastic gynaecologists belonging to the mechanical school, they have been regarded as instances where the suffering was due to the retroversion or retroflexion of the uterus—a condition which is regarded by many of this persuasion as the origin of all kinds of pelvic suffering, to be remedied only by the persistent application of all kinds of pessaries. Others, again, have had their sufferings intensified by operations for stenosis of the uterine canal, the stenosis being the result of damaged uterine appendages, and not in any sense a pathological condition of itself demanding interference.

Let me give five examples for the purpose of illustrating the cases, and the incidents which led them into their misfortunes.

A. B——, aged twenty-two, began to menstruate at thirteen, and quite regular until fifteen, when she suffered from a severe attack of scarlet fever. After that her menstruation was too frequent, too profuse, the periods generally lasting as much as eight or ten days, and the intermittent periods rarely exceeding fourteen. The amount lost was very profuse, and her sufferings during the whole time were intense. She had been living the life of an absolute invalid for eight months before she was brought to me, and had rarely been out of the hands of some practitioner or other since the time she first ailed; after the scarlet fever, in fact, she had been seen by many eminent physicians, and had been under the care of two or three noted special practitioners.

When I saw her I found the conditions as I have described—a small infantile uterus, retroflected and fixed in its position, the uterine appendages on either side could be indistinctly felt, and they were equally immobile. I recommended that the appendages should be removed, and the operation was done on July 18th, 1882. My diagnosis of the condition was completely confirmed. She made an easy recovery, has never menstruated since, and after a few months' trouble with the climacteric change all her symptoms were completely relieved, and she is in the present year (1888) in the enjoyment of perfect health.

A. C——, aged 33, married eleven years, five children, the last four years before the operation. Soon after her last confinement she had a bad attack of scarlet fever, and did not suckle during her illness; her periods were immediately resumed, were intensely painful and profuse. She was ten weeks recovering from her confinement and the fever, and ever afterwards suffered from pelvic pain, on account of which she was for ten weeks an in-patient in the North Staffordshire Infirmary. I saw her first in 1882, and found the uterus retroverted and retroflected, rather larger than usual, the appendages adherent in every direction. I advised their removal, and this was accomplished with great difficulty. She menstruated irregularly for some months after the operation, but about the end of 1884 she had ceased to do so, had ceased to be troubled with any climacteric indications, and now is in perfect health.

M. A——, aged 29, married ten years, had one child within a year after her marriage, but two months after her marriage she had a bad attack of scarlet fever with a clear history of pelvic inflammation, and after that she menstruated every two or three weeks very profusely for eight or ten days; after each period she had profuse leucorrhœa, lasting until the next period. About four years after that her menstruation began to be intensely painful. In spite of a great variety of treatment extending over three and a half years, by many practitioners, she got gradually worse until her pain became agonising, and she took to alcohol in large quantities and an inordinate quantity of opium in order to relieve her suffering. I operated upon her on January 3rd, 1880, and found the conditions previously described. She made an easy recovery, and in August, 1881, I heard of her as being fairly well; in May, 1883, as being quite well; and last year I saw her in the enjoyment of perfect health.

Nearly twenty years ago I was consulted by a young lady for painful menstruation, and I found the uterus infantile and fixed back in the pelvis. Ignorant then of the true nature of such cases, I occupied some four or five years in various ingenious devices for rectifying the displacement, and the patient endurance of the patient was to me a source of great satisfaction. Rings and levers and stems of all kinds were tried, and no real benefit was derived. I then resolved to give my patient a year's respite, but at the end she was no better. I obtained the advice in consultation of two of the most eminent gynaecologists, and both (most unfortunately) encouraged me to persevere in the mechanical treatment of this case. I did so, and failed to do any good as before. I again desisted, and sent the patient away to a health resort. Then she had a sudden attack of peritonitis and died. A post-mortem examination revealed the fact that a pyosalpinx had ruptured, and for that pyosalpinx, I know now, my

mechanical treatment was responsible. The case was clearly one of old (probably exanthematic) perimetritis, in which the retroversion was only an incident and by no means the real ailment. Such a case ought never to be touched by pessaries, as I know very well now—as, indeed, I learnt from this and one other equally unfortunate case; and I know that pessaries have probably done far more harm than good to humanity by the indiscriminate and improper use which has been made of them.

C. W——, aged 34, saw me for the first time in 1883. She had been married for twelve years and had never been pregnant. She was at school in Cologne when about sixteen, two years after her menstruation had been established, and then she had a severe illness from which she nearly died, but the nature of which she could not tell me, save that “it broke out in the school.” I have no doubt it was scarlet fever. Ever since her menstruation had been wrong, and she had made a good society marriage against the strong advice of an old family doctor, who was a friend as well as her medical attendant. Why he had given that advice she did not know, but she had understood that it was based more on society than on medical arguments.

The marriage was most unfortunate, for she found very speedily that she could not endure her married life; both she and her husband were miserable, and they separated in less than a year. From then till 1883 she had never been out of the hands of the doctors for a “misplaced womb.” In 1876 Marion Sims “opened up the womb.” For two years she lay most of her time on her face, with a “cradle” in her inside, under the care of one of the most enthusiastic physicians of the mechanical school. Krentznach knew her for four seasons. Everything was done in vain. I saw her, as I say, in 1883, and recognised the nature of the case to be one such as I have described, and I recommended her to have her uterine appendages removed. The proposal was, however, promptly declined as soon as it was explained to her that it rendered it impossible for her to have children. Her one hope in life was to be cured of her displacement, get her husband back, and have a child. She disbelieved entirely my view that the retroversion was a mere incident, and could quite well be dismissed from consideration in face of the real and more serious disease of the appendages. For nearly three years I heard no more about her, till she turned up and begged for the operation. She had gone another round of specialists, all of whom promised to cure her by one theory after another (uterine galvanism, amongst others), but she was worse instead of better. I operated on her in 1885, and found, quite as I had anticipated, that the uterine displacement was due to adhesions which could not have been overcome by any kind of treatment, which I did not even attempt to undo with my fingers in the pelvis. The ovaries and tubes were

so atrophied and so adherent that it was certain that all possibility of fecundity had been destroyed when she was sixteen, and that the twelve long weary years during which she had undergone martyrdoms had been entirely wasted. Her appendages ought to have been removed soon after marriage.

The result of the case was that after about twelve months' convalescence she obtained such perfect health that I saw her husband and told him that she was now fit for marital life, as she never had been before. They have lived together now for two years, and are perfectly reconciled—perfectly happy.

The following is another illustration of the mischievous results brought about by interfering with these exanthematic cases by means of pessaries:—

Mrs. H—— was sent to me in October, 1886, by Dr. Johnston, of Leicester. Her menstruation began at fourteen. She had some illness at the age of fifteen which was probably of an exanthematic type, but the history was not at all certain. Arrest of menstruation took place, and continued for about eight or nine months. Then she began to get regular again, each period lasting from eight to ten days, excessively profuse, and with great pain the first two days, with precedent pain lasting often for a week. She married at twenty-three, and about two years afterwards she consulted an eminent obstetric physician in London on account of her sterility and suffering. This gentleman dilated the uterus and put in a stem pessary. Within a week she had an attack of pelvic peritonitis, with the formation of what was called a blood tumour. This ultimately resolved itself into an abscess, and is said to have burst into the vagina. She was ill for four months, and very nearly died. I saw her in October, 1886, and found that she was menstruating for seven or eight days very profusely and with great pain; was worse than ever; could not walk at any time; at her periods could not get about at all; could not endure intercourse. I found the left appendages completely fixed, and two large globular masses on either side of the uterus fluctuating. I diagnosed double pyosalpinx, and recommended that the appendages should be removed.

I operated upon November 11th, 1886, and found the whole contents of the pelvis matted together; both tubes were distended by a large quantity of pus, and the ovaries were practically disorganized. She made a good recovery, but unfortunately had a hæmatocele on the left broad ligament which retarded her convalescence a good deal. Still, when seen in January, 1888, she had immensely improved in health; in fact, was another woman altogether.

I have no doubt in this case that her condition, before the dilatation of the uterus and the use of the intra-uterine stem, was that of an occluded tube with slight effusion of the nature of a

hydrosalpinx ; but the mischief set up by the stem converted that relatively innocent disease into the virulent pyosalpinx for which I had to interfere.

I do not propose to anticipate here what I have to discuss later on—the general principles of this much-debated question, the removal of the uterine appendages—but there are one or two special points in connection with these cases of exanthematic adhesions and atrophy which are most important. In the first place, if we could only find them out and warn them, the great bulk of them never would—certainly they never should—get married. I have recently seen a pronounced case where atrophy advanced to completion and menstruation was arrested at nineteen. At twenty-three she married, and then the premature senility seems to have advanced to such an extent as to involve the vagina ; at least the involution was such that when I saw her, about two years after marriage, the uterine cervix was like a small pimple in a short and wholly inadequate canal. As she menstruated from thirteen to fifteen in a perfectly normal way, we may assume that up to that age her organs were all right in size and function. During her sixteenth year she had a bad attack of smallpox, with pronounced pelvic peritonitis, and then she went through the atrophic history. Several attempts had been made to dilate the canal by instruments and incisions, but only with the result of adding to her misery. I advised a separation, and this has been acted upon ; and I really think such a condition constitutes a proper ground for divorce.

The women who suffer from adherent and retroverted wombs always suffer much in receiving their husbands, and this constitutes one of the arguments for removing the uterine appendages in pronounced cases. The general arguments will be considered in another place.

In performing the operation two or three special points must be borne in mind. The first is that, as the case has been essentially chronic in its progress, many years having elapsed necessarily from the infliction of the original injury, the adhesions are very dense and difficult to break down. Such operations are therefore most especially the province of the experienced operator. The beginner is almost certain to quail in the middle and leave the operation unfinished, and this is the real reason why this kind of proceeding has received such queer treatment at the hands of certain critics. These men have tried their hands at a few cases, have declared that it was “impossible to get the things out,” and therefore have left them in. I have frequently removed appendages after others have failed, and in some of my earlier efforts I have left them in ; and then I went back, after greater experience, and got them out at a second, and in one case at a third operation, and have cured my patients. I am quite certain now that *in the hands*

of a competent operator there are no adhesions of the uterine appendages which cannot be overcome, and no case ought to be left unfinished. Incomplete operations are the opprobrium of abdominal surgery, and operators ought to be more discredited by them than by anything else.

Finally, as I have said, the retroverted and adherent uterus is a mere incident in the case, and should be left alone. Remove the appendages and arrest menstruation, and the uterus will cease to give trouble. The uterine adhesions are very liable to bleed, and to arrest this bleeding is a very difficult matter. In the few cases in which I have ventured to meddle with these I have had reason to regret my interference.

Speaking of chronic ovaritis, Dr. Mathews Duncan gives the following valuable evidence, which I quote in full on account of the precision of the language, the eminence of the author, and most of all because, as Dr. Mathews Duncan does not practise surgery, he may be expected to give his opinions without surgical bias.

"These cases, indeed, generally resist all treatment. Here is a case:—A. H.——, aged twenty-four, married a year and a half, never pregnant; catamenia regular. She complains of painful menstruation. On examination the left ovary is easily felt, and somewhat swollen and tender. The uterus is natural, except extreme sensitiveness of the mucous membrane of its body. The cervix permits easily the passage of only a No. 7 bougie. After some partially successful treatment of the dysmenorrhœa, she left the hospital, but soon returned, saying she was not cured. Now she privately made known that what she wished cured was not so much her painful menstruation as pain in sexual connection, a pain which delicacy had prevented her from earlier mentioning. With this in view she was re-examined, and now both ovaries, somewhat prolapsed, swollen, and tender, yet freely mobile, were easily felt. Pressure on either of them produced pain, which she recognized as that of her dyspareunia. She is now under treatment. Counter-irritants externally, and small doses of corrosive sublimate internally are being used. I can only say I hope she will be cured."

Here, then, we are dealing with a disease which one of the greatest living gynæcologists frankly admits is almost incurable. In hospital practice I assert that it is absolutely incurable in by far the greater number of cases. The only means of arriving at so satisfactory a result is limited to the classes possessing wealth and education, for with them alone is it possible occasionally to get a cure. More than this, it is only in a life of luxury that it is possible to prevent the relapses to which this disease is so liable.

The symptoms of the disease vary very considerably, yet there are certain features common to all the cases which are sufficiently definite for reliance to be placed upon them for purposes of diagnosis.

Pain is an inevitable feature, and nineteen times out of twenty it is worse on the left side than on the right; and if it exist on one side only, it is almost certain to be the left which is affected. The explanation which I offer of this peculiarity will be found in the first chapter (p. 8).

This pain is always referred to the groin as the point of origin and of its greatest intensity. It is nearly always persistent, and liable to exacerbation when the patient is in the erect position—when walking, but more particularly when being jolted in a carriage. It also becomes more intense as the organs become congested at the monthly periods. When the pain is intensified from any cause, it extends from its habitual seat down the thighs and round into the back, and very often a reflex pain is excited in the breast of the same side. Sometimes the pain is so great as to prevent the patient straightening herself, and obliges her to walk what little she does in a semi-bent attitude. Pressure upon the seat of pain always increases it, and the slightest touch on the ovary from the vagina gives rise to a peculiar sickening sensation which is very characteristic. For this reason, and also from the fact that her chronically inflamed ovary is nearly always displaced downward, marital intercourse is generally a cause of great pain, and, in the majority of instances, is absolutely unendurable. Generally speaking, the pain lasts throughout the whole period of menstruation; but in some instances it varies in this particular, for in some of the most pronounced cases of chronic ovaritis that I have seen the pain ceased, or at least was greatly diminished, on the appearance of the menstrual flow.

Menstruation itself is in most cases profuse, but in some of the cases I have already detailed this profuse metrorrhagia is due not so much, perhaps, to the ovaritis as to the fundal metritis and the inflammation of the tubes with which it was associated, and it has been the chief cause for interference by surgical operation. Those cases in which hæmorrhage is a characteristic are, I believe, those in which the inflammation has greatly affected the tubes. I have found that, in the cirrhotic cases, there is less inflammation of the other organs, and generally an atrophy of them, as of the ovary itself in the later stages; and that, as a consequence, the periods, instead of being profuse, become subsequently rather scanty. It is in the former cases that we find the ovary studded with small cysts, whereas in the others the increase in the size of the ovary is of the solid kind.

It has now become perfectly certain that there are two kinds of pathological appearances produced by chronic ovaritis, and these are probably the result of two wholly different morbid processes. It is in the cases where we have a cyst-production that we have the most adhesions formed, and I think, from what I have already seen, that it is very likely that these adhesions are produced by

limited inflammations resulting from the rupture of these small cysts. This phenomenon was originally described by Dr. Mathews Duncan, and I have seen the results of it, I believe, in several instances, and in one of my cases I have twice been quite certain, from the completely altered condition of the ovary at separate examinations, that such ruptures must have taken place. I have so often seen these cysts rupture immediately the ovary was touched, that I can have no doubt of the accuracy of Dr. Duncan's description. I exhibited a specimen recently to the Pathological Society of a cyst of the Fallopian tube which I had recognized as having repeatedly been the subject of rupture, each rupture being followed by an attack of acute peritonitis. The specimen was obtained on post-mortem examination after the sudden death of the patient from heart disease.

The physical examination of a case of this kind requires to be conducted with a great deal of care, for nothing disappoints a suffering woman more than to have her pain increased by rough handling. When, therefore, the practitioner hears a narration of such symptoms as I have described, let him be careful how, by his finger, or the sound, or the speculum, he injures a displaced and inflamed ovary or tube. It will, as I have already said, be easily found behind, and about on a level with, the upper part of the cervix. A careless observer may mistake it for a retroflected fundus, and introduce a pessary for its replacement, but this will prove to be nearly always a source of disappointment; indeed, as I have already said, it may be a source of danger. Besides the symptoms of inflammation of the ovary in a chronic case, there are symptoms of uterine complication, and a very great many of the cases of intractable endometritis met with in practice are really but expressions of the same serious disease.

I have now to deal with a great group of cases of inflammatory disease of the uterine appendages due to specific infection—that is, the result of gonorrhœa; and with my increasing experience there is an ever-widening belief in the extent and importance to which this cause is to be laid down as the origin of suffering in women. Even an acute gonorrhœa in a woman is not a matter often to be unhesitatingly discriminated, and I am certain that hundreds, if not thousands, of instances are occurring annually in which serious and even fatal mischief is done by gonorrhœal infection, the victims of which are entirely unconscious of its primary infliction.

Some of the best authorities amongst those who have to deal with gonorrhœa amongst men go so far as to say that it is a disease which is never really cured. As I have little or no experience of the disease in males I cannot express an opinion on this subject, but, if I may judge of what I know of the disease told me by patients and their husbands, I accept this view thoroughly. I can

see no way out of its acceptance to understand the occurrence of large numbers of cases of terrible disease. Such a story as this has been told me in dozens of instances:—A young man about eighteen or twenty years of age had got a bad gonorrhœa, had placed himself under judicious treatment, and in a few weeks was told that he was, and felt himself, perfectly well. He remained well; indeed he asserts that his one lesson has been enough, and he has never again risked the chance of a second. He subsequently married a perfectly virtuous woman when he was six or seven and twenty. Within ten days of this marriage they were both suffering from distinct gonorrhœal symptoms; she had an attack of pelvic perimetritis, and in a few months or years she will probably come on the operating table with pyosalpinx. How did the gonorrhœa come? To believe that the husband's story is false, and to accuse him of a fresh error and a deliberate infection of the woman who is to be his life long companion, is too brutal, even though German authorities deride such experiences as "frivolous anecdotes." Besides, it is not consistent with the evidence constantly occurring, and pointing to the conclusion that in such a man the disease has never been cured, but is only dormant. It is re-excited by the indulgence of the bridal chamber, and it extends to the genital canals of the unfortunate woman.

Noeggerath, as translated by Sinclair, vividly corroborates my story. "The man, either already a dweller in a large city, or in his capacity as traveller, student, &c., has become initiated into the mysteries of modern civilisation by contracting gonorrhœa. This disease, although it may have apparently disappeared without leaving a trace behind it, makes him for many a day capable of conveying the contagion. The young hitherto healthy wife begins to complain a few weeks after marriage: attention to her domestic duties becomes a burden to her, and walks which could formerly be taken without the least effort now give rise to signs of fatigue; menstruation becomes more profuse than formerly, and there are pelvic pains during the first days of the periods; a little vaginal discharge follows each period, and this, gradually increasing, ultimately continues without intermission until the next menstrual period begins. After a few months really severe pains come on, either in the left or the right half of the pelvis, and the sufferer is ultimately compelled, on account of feverishness and unbearable burning in the abdomen, with increased discharge, to take to bed and send for medical help. According to the severity of the attack, she remains confined to her bed for weeks, or perhaps many months, with exhausted strength, struggling for life, ultimately slowly recovering, but remaining sterile and invalid for the rest of her days.

"It not infrequently happens that the woman who is married under such circumstances soon becomes pregnant, and during her

pregnancy she suffers from pelvic pains, which are supposed by herself and the doctor to be necessary drawbacks of her condition, and so she receives no particular attention. It sometimes happens that the symptoms become so urgent as to call for active treatment in order to prevent miscarriage. Labour ultimately comes on, and is followed by a severe endometritis with perimetritis, the former or the latter being the more prominent feature of the case. The development of this inflammation may begin either immediately after the birth, or, as is frequently the case, it may come on eight to fourteen days, or even six to eight weeks after."

But Noeggerath, a supporter of the microbe theory, would have us believe that, for the long period between the husband's original trouble and the time of his marriage, a few "gonococci" were peacefully resting on their oars in his urethra, "waiting for something to turn up," and they were the cause of all the disaster. This absurd theory leads its propagators into all sorts of inconsistent positions, out of which they seek for no escape, but meet criticism by passive resistance and reassertion of their views. If this husband had gone into fresh and infected temptation he would have got another clap. If, during his honeymoon, he had been content with moderate instead of immoderate indulgence his urethra would not have had its old trouble excited, and his wife would not have suffered. The "gonococci" might have gone about their daily business without fear or reproach. The fact is that the gonococcus is the result of the process, and not its cause. German observers find the specific "coccus" (Sänger, Oppenheimer, and Lomer) in nearly 30 per cent. of pregnant women! This is a new phase of lunacy—"coccophobia." Even Sinclair is affected by this disease, for he attempts to explain one of the difficulties I suggest as follows—ingeniously but fruitlessly—concerning the latent gonorrhœa. "The gonococci are few and decrepit, probably altogether absent from the periodic emissions of a continent man. It is only the post-nuptial excess which rouses them into sufficient vigour to be harmful." The idea of a decrepit "coccus" is very good. Even the most advanced German observers admit that they cannot find or develop these little beasts after the acute stage is over, yet the urethra is never cured of the disease, and is ever ready to re-develop it and to give it another victim.

Early in life I heard one eminent surgeon, one of my own teachers, say that if he were condemned to have a venereal disease he would rather have syphilis than gonorrhœa. I marvelled and disbelieved, but now I know that, if he included women in his thoughts of the subject, he spoke truly. Syphilis is a relatively harmless disease. It may cause discomfort and distress, and even much pain, but I doubt if it ever kills women. If it does, where syphilis kills its tens gonorrhœa kills its thousands, and it would take the sufferings of a hundred cases of syphilis to make up

for the long weary years of agony of one case of gonorrhœal pyosalpinx.

In 1873 I published the following experience:—"A case of alternating ovaritis, for which I have been unable to discover any cause, was for some time under my care in hospital practice. The patient, J. K——, aged twenty-five, came to the hospital with well-marked acute inflammation of the left ovary. She had been married for three years and had never been pregnant. There was nothing in her history to make me suspect that she had suffered from gonorrhœa, nor did she know of her husband having so suffered. The left ovary recovered in a few weeks, but remained somewhat enlarged and very tender, and it was also somewhat fixed. In about two months she came back with the right ovary quite as severely involved, and has since been several times under care with recurrences on one or other side; but both ovaries have never been attacked together, and none of the attacks have been associated with menstruation, which, always irregular, has been gradually getting rarer and more scant. The most probable explanation of this curious case is, that she is exposed every now and then to some infection which travels up her Fallopian tubes and attacks the ovaries without giving any indication elsewhere of its presence. The possibility of such an event must always be borne in mind, and as a guide to future directions it may be advisable to ask cautiously into the history of an attack of acute ovaritis." This record was republished in the first edition of the present work in 1877, and I remember very well one of the reviews made great fun of it as a double-dyed refinement of diagnosis. But the after-history of the case confirmed my view, for in 1880 I removed her appendages, and found her suffering from double pyosalpinx and chronic ovaritis. It was this case which first impressed me with the gravity of gonorrhœal infection of the uterine appendages.

Another case similarly published is as follows:—"Some years ago a gentleman who had been a short time married, visited a neighbourhood where he unfortunately met a friend of his bachelor days. Within forty-eight hours he came to me in terrible distress, with the initial symptoms of gonorrhœa, but with the still more terrible dread that he might have conveyed it to his wife, for intercourse had taken place a few hours before his symptoms appeared. Of course I at once cautioned him to refrain absolutely from intercourse with his wife—advice which I have no reason to believe that he disregarded. His gonorrhœa proved very trifling, and passed off entirely in less than a week. Wishing to take his annual holiday, he brought his wife to me to make sure that she was free from disease, and I could not find the slightest trace of vaginitis. I therefore sanctioned their travelling to a considerable distance. But within three days I was summoned

to her, and found her suffering from a most severe attack of inflammation of the left ovary. After some weeks she got well, though the ovary could be felt, both by rectum and vagina, as large as a small orange, firmly fixed and exquisitely tender. Suddenly the right ovary became similarly affected, and after a most severe illness, during which she seemed frequently at the point of death, she recovered, with the right ovary similarly enlarged and fixed. She never menstruated after this second illness, and she now lives a semi-invalid life, hardly ever free from pain, and unfit for any great exertion, though as time goes on her suffering seems to obtain slight amelioration. She is quite unable to endure marital intercourse, and the best thing that could be done for her would be the removal of the uterine appendages. She belongs, however, to the better ranks of life, and we find that patients of this class very often prefer a chronic invalidism to the risks of an operation. They can pay for any amount of luxury and medical attendance, and they do what is best for their doctors in a pecuniary sense, but not what is best for themselves."

"The history of such a case is undoubtedly that the poison has permeated the uterus and Fallopian tubes, alighting on the ovary from the tube probably at the time that the fimbriæ were in association with it; but it is somewhat surprising that there was never any trace of vaginitis."

The peculiarity of this case just alluded to, in the absence of distinct vaginitis and vaginal inflammation, has repeatedly occurred to me since, and the remarkable observations of Dr. Sinclair go a long way to confirm the suspicion that I have of late years entertained, that gonorrhœa may be communicated to the uterus without the vagina being affected at all, and that probably these are the most severe cases that we have to deal with. Dr. Sinclair goes so far as to say, "It is not unusual to hear the acute form of gonorrhœa referred to as vaginitis, by a sort of euphemism, and yet it is still a question whether there is any such thing as gonorrhœal vaginitis. The vagina seems to be the last portion of the genital tract from the uterus downward to become affected, and the first to get well under any suitable cleansing process." I certainly cannot go so far as this, for acute vaginitis, undoubtedly of a gonorrhœal kind, which never goes any further is of very common occurrence amongst my hospital clientèle. But I am perfectly prepared to assert that there must be a considerable percentage of cases in which the gonorrhœal infection applies itself to the uterus immediately, and then through the tubes to the peritoneal cavity; and in these cases we never get the initial story of vaginal infection.

The history of the case which I have just given is quite as interesting as that of the one before it of the alternating ovaritis, for after nearly eleven years of suffering this poor lady permitted

me to remove her appendages. I found them matted together, and double tubo-ovarian cysts with cheesy contents. The operation had a somewhat protracted convalescence, but it has since restored her to health, which she has never known during her married life.

My first observations on the occurrence of gonorrhœal inflammation of the uterine appendages were made in 1870 and 1871, and are alluded to in the Hastings Prize Essay (*British Medical Journal*), 1873. As this essay was written in the end of 1871 and beginning of 1872, and in the hands of the adjudicators for many months, it must be evident that its conclusions were made quite independently of those of Dr. Noeggerath, whose pamphlet was not in this country till 1873, and was never seen by me till 1876. I mention this only because some of my German critics have stated that I had taken my views from Dr. Noeggerath without acknowledgment, and this is simply not the fact. They were formed quite independently, and have not been altered in any way since, save by way of extended confirmation.

By far the best writing on this subject which has yet appeared is the scholarly contribution of Dr. William Japp Sinclair, already quoted, and which appeared last year in the *Medical Chronicle* (Manchester), and to that source I am much indebted for information on the more recent attitude of the much-discussed germ theory of the disease. This paper "On Gonorrhœal Infection in Women" must leave very little to be said on the history of the question up to the time of writing.

It is necessarily impossible to discuss this most intricate and interesting question without touching at least on the zymotic theory of inflammation, which is now the fashionable craze, and which has, of course been extended to gonorrhœa. A "gonococcus" and a "diplococcus" have been discovered, and they have been elevated into the dignity of being the origin and cause of the disease, and the assertions about them are as positive, and at the same time about as unsubstantial, as were those in the old days concerning phlogiston. The germ theory has had a most especial hold on the minds of German writers, and Sinclair's paper is a most admirable example of boiling down into a valuable extract, and making intelligible, the countless reams of paper which the German bacteriologists have showered upon us during the last four or five years. I confess I gave up all attempts to follow them some time ago as a profitless task and a waste of time, and therefore I am grateful to Dr. Sinclair.

I must express my regret that so critical a writer as he is has been bitten with this microbial craze, but I have no doubt he will come soon out of it, for it is wholly irreconcilable with the clinical facts seen by us every day—facts which the Germans are disposed to set aside as mere "frivolous anecdotes." The German scientist is rudely disposed to regard the "mere practitioner" as

something little short of an idiot, especially if he will not accept as indisputable the theories of his so-called science. Dr. Sanger, of Leipsic, has been especially severe on me for this reason; but abuse forms no argument, and Dr. Sanger's microbes are about as far from being accepted now as when he first introduced them.

The doctrine that these special organisms are in some instances the cause of special diseases may be true—I think it probably is true; I go so far as to say that, for in splenic fever it is almost proved that the disease is caused by a bacillus. But our German friends go too fast when they assume that because this is true of splenic fever it is true everywhere that a specific fungus is found.

The ordinary *torula cerivisiae* can be made to take two distinct forms—in a solution of sugar and on the surface of a raw potato. May not many of these different forms of “coccus” be the same thing on different sites, and therefore with different appearances? No cultivation experiments have yet removed this inherent difficulty. Further, the torula is always present when alcohol is found, and in all the crude forms in which alcohol is used the torula can readily be isolated and cultivated to any extent. But the torula is not the cause of the intoxication which its unexplained presence might lead a primitive bacteriologist to imagine. It is the alcohol produced by the torula which is the poison, not the torula itself. How can we tell, then, that the story of the “gonococcus” is not the story of the torula, and that, therefore, the statements of the German bacteriologists, even if they were all incontestible, constitute only half the story? Not only so, but there is another *à priori* difficulty not in the least met by any of the writers, German or English, whose views are known to me; indeed, it is not once suggested in the records of all the cultivation experiments which I have examined. It is that these special organisms are not the cause but the result of the specific inflammatory process. Thus, if we take two trees, a larch and a beech, both possessed of dead wood, we shall find fungi growing on both, but the fungi will be wholly different: those of the larch will not grow in the dead beech-wood, and *vice versa*. On the view of the bacteriologist, we should have to assume that the fungi were the cause of the death of the wood, and that each tree was the victim of a special disease; but that is knocked to the winds by the “frivolous anecdotes” of every-day experience. We know that these fungi can grow only on wood in process of death, or at least with diminished vitality. They are the result, not the cause; though in themselves they do bring about specific changes in the tissue beyond all doubt, breaking it up and destroying it. Here, then, it becomes apparent that the investigators of the microbes have got hold of only one end of the stick, and that this theory, like all that have gone before it, has failed to gather

into scientific exactness the ever-conflicting facts of the practice of medicine and surgery. It has made valuable additions to our knowledge, but it does not explain everything.

If those who glue their eyes on to the barrel of a microscope deride the "frivolous anecdotes" of clinical record, we, on the other hand, can afford to laugh at the failure of the theorists who make it "so much the worse for the facts."

Thus we know that a man never gets really cured of a clap—that under any stimulus of excess in wine or women it will come back and be effective. But the bacteriologists confess, with a unanimity that is for them remarkable, that in this latent stage no "cocci" can be discovered. Are those industrious little beasts re-created on *fresh* epithelium, by a glass of beer, or by three or four marital acts instead of one? To believe such nonsense is impossible. What happens, doubtless, is that by the original attack the mucous surface is altered for ever, that the temporary congestion leads to the development of the poison, just as temporary congestion of any gland leads to its increased secretion, and upon this secretion some of the numerous spores, ever present, settle and develop the form peculiar to this special discharge. Only such an explanation as this can be admitted as consistent with the "frivolous anecdotes" which are part of our every-day experience.

Why does the same woman give gonorrhœa to one man and not to six or eight others who may have intercourse with her within a few hours? Why is it that some exceptional men can never have intercourse with any woman, however pure, without getting a gonorrhœa? In fact, we may go on asking five hundred other questions, to not one of which can any answer be given which is consistent with the microbial theory.

The bacteriologists, like all enthusiasts, wish to argue back from their establishment of a specific gonococcus to a further and more dangerous ground. They—at least some of them—assert that where the gonococcus is, there is gonorrhœa. Where there is no such beast gonorrhœa is not. Then another tells us that the gonococcus is invariably found in the troublesome vaginitis of children. Long may there be a gulf between this kind of pathology and our clinical facts. As it is now we have trouble enough to establish in these cases what is the fact—that the disease has not been improperly communicated to the little patients. If the "coccus" notion gets any serious hold of the public mind the troubles on this point will be endless and the results disastrous.

But the final test of this germ theory—the best of all—is that of empirical therapeutics. If the microbial theory were correct, if it were consistent with clinical facts, we might safely affirm that the best treatment for gonorrhœa lies in the direction of germicides. Of course the German writers say so, to be consistent, and we find all sorts of recommendations of hot douches with

sublimate, carbolic acid, and iodoform, when we—that is, those who have the “frivolous anecdotes” occurring daily in their experience—know that to a woman suffering from gonorrhœa there is nothing so dangerous as a vaginal injection, nothing so ineffectual as any one of the substances named.

On the other hand, the remedy of all others is the old-fashioned cocoa-butter pessary, containing a few grains of powdered oak-gall and powdered opium. Sinclair tells us that Schwarz, of Halle, recommends a long rigmarole of a method of treatment by germicides, which “process was hardly ever known to fail;” and on the same page tells us that Malusardi’s experiments tend to discredit iodoform as a germicide for the gonococcus, and iodoform is the main element of Schwarz’s process. Verily these scientists indulge in some most frivolous statements.

Putting all these theories aside as fanciful, misleading, and useless, accepting thankfully what facts the scientists may give us, and leaving their true explanation to time and opportunity, let us see what clinical experience teaches us of the mischievous effects of gonorrhœal infection of women.

Sinclair truly says that the surgeons until of late years have accepted it only as a trifling incident, and it is clear that the obstetricians, who had better opportunities for knowing, have entirely overlooked the facts. Modern gynæcologists have unearthed the conclusion that gonorrhœa is a terrible and fatal scourge to women.

When I first began to show my preparations of pyosalpinx and narrate the cases from which they had been removed, some twelve or fourteen years ago, at our medical societies, there was no expressed doubt as to the facts, for the evidence was incontrovertible; and I was able to show that our old authors had known all about such cases, and had fully described them, but it was on all hands asserted that they were rare. But as my experience went on, as my mortality diminished, as, in fact, I was able to give women relief from lifelong suffering at a constantly diminishing price, in the form of lessened risk, I was able to show that these cases, instead of being rare, were extremely numerous. At the International Congress of 1881 the celebrated criticism of Sir Spencer Wells, “I have seen only one such case in my life; I suppose they must all go to Birmingham,” gave the keynote to professional incredulity. But the time came when my facts were fully confirmed, and the awful conclusion forced upon us that gonorrhœa is, as I have said, a terrible and fatal scourge. There are some, however, who are still as uneducated in the midst of a mass of experience as to be unable to recognise the troubles of which I am about to speak; and I can feel deeply with Dr. Sinclair in his story of “a London gynæcologist” as given in the following case:—

“A lady, now thirty years of age, was married twelve years ago, and during the first year of wedlock contracted from her husband gonorrhœa. She had a miscarriage at seven months, about a year after marriage, and since then she has been a wreck. At present she suffers from enlargement of the uterus, which becomes completely anteverted at times on exertion, making even a moderate amount of walking impossible. Her ovaries are enlarged, especially the right, and they become very painful at the menstrual periods. Menstruation is scanty and very painful. There is now hardly any leucorrhœa. The anteversion of the uterus causes much bladder distress at times. She is anæmic and thin, the reverse of what appears to have been her condition before marriage.

“There is in this case the history of a long serious puerperal illness, necessitating constant medical treatment for over twelve months. The patient has been under treatment for relapses at short intervals almost continuously since recovery from the first severe attack. She has never become pregnant again. She appears to have worn all manner of pessaries, and to have tried internal and external applications of every kind. She has had the uterus dilated once, resulting in a severe illness of some kind; and she used to have some days of suffering every time the sound was passed by any one of the numerous specialists whom she has consulted in the course of years. Among other therapeutic measures that have been tried has been median incision of the cervix uteri, the only remaining objective evidence of which seems to be a small notch on the posterior lip of the os. What the anatomical condition is at present, and how much of the deviation from the normal is to be ascribed to the original gonorrhœa and how much to treatment, I could not profess to decide. Twelve months ago she consulted, at my suggestion, a London gynecologist, who wrote to me, ‘She seems to me to have very little the matter,’ and went on to say that, in his opinion, she was suffering more from treatment than anything else, and he had advised her to give it all up, ‘to walk and dance and enjoy life.’ This same gentleman—it is not difficult to recognize him—has over and over again said the same thing to poor women from whom I have afterwards removed suppurating tubes and sloughing ovaries.”

In the earlier part of my experience I endeavoured to classify my cases by the character of the fluid contained in the usually occluded Fallopian tubes. But I found as my experience grew that this was impossible, for the nature of their contents did not bear the expected relation to the intensity of the symptoms, and the presence of fluid of different kinds on the opposite sides in many instances made classification impossible. I have of late years been trying a classification rather on the lines of the ascertainable causes of the disease; but here we are met with difficulties almost as great, and therefore I think we shall be

driven to class all the cases together simply as "inflammatory disease of the uterine appendages," leaving relative classification very much to the personal intentions of the individual recorders or their critics. There can be no doubt that, so far as prognosis is concerned, the different classes of cases differ most materially in the matter of the contents of the tubes or of cyst cavities in the ovaries, and the element of danger to life increases just in proportion as the inflammatory change approaches the purulent stage. But we have something more to do than merely to save life: we have to relieve suffering. We find from abundant clinical experiences that old exanthematic adhesions of the appendages, caused by the acute inflammatory process occurring during adolescence, will cause lifelong misery as great, indeed far greater than is present in many cases where life is threatened by a double pyosalpinx. The demand for surgical interference, therefore, is not necessarily proportionate to the degree of severity or extent of the pathological change.

In many cases it is not possible to get a history of gonorrhœal infection; in very few is it expedient to press our questioning for the purpose of obtaining a history. If symptoms of acute inflammation of the appendages occur in a married woman or a woman who gives signs in the condition of her vagina that she has been unchaste, it is safer to assume that it is of gonorrhœal origin unless it is in the post-*puerperal* condition—that is, of course, either a labour or miscarriage. Even then, however, as I shall show by-and-by, gonorrhœa is a frequent cause of the trouble. The evidence accumulates all in the one direction, that the great majority of such cases arise from this source. If, on the other hand, a woman be *virginal*, this supposition is unnecessary, and some other cause must be admitted. I have seen a number of such cases, and of these I shall speak separately; but they constitute a small minority of my experiences.

The aspects which a case of inflammation of the uterine appendages, whatever be its origin, will show to the practitioner who is called to deal with it will depend very largely upon the relations which the practitioner in question holds to the practice of his profession. Thus, in my own case, it is an exceptional thing altogether for me to see these cases in the acute stage. It is perfectly true that a number of the practitioners in my own neighbourhood have become so thoroughly conversant with these diseases that they are inclined to, and sometimes do, call me in to their cases in the acute stage. But this is done generally only when the acute inflammatory process has become so serious as to endanger life, and necessitate prompt interference. As a rule, the acute stage does not involve a heavy mortality, and the disease itself does not usually at first bring about such severe symptoms as to lead the medical attendant to believe that the patient is

in much danger. In fact, the great majority of cases of chronic inflammation of the uterine appendages that we see only have the illness which represented the acute stage called to their mind upon questioning, and upon their being obliged to fix a date at which a marked change in their condition of pelvic health was brought about. As a matter of fact, the acute stage has often been passed over, even at the time of its occurrence, as an attack of colic, inflammation of the bowels, or, if the practitioner happens to be one whose diagnostic powers is more than usually minute, it would be put down as an attack of ovaritis, pelvic hæmatocele, or some more or less well defined pelvic ailment.

On the other hand, a practitioner who is a specialist will have brought to him a large number of such cases in the chronic stage. In the out-patient department of my hospital clinique, and in my private consulting-room, not a week elapses without my seeing two or three or even a larger number of pronounced cases of this kind; whereas my being summoned in consultation to see an acute case probably does not happen more than three or four times a year. Cases are now on record in which acute gonorrhœal infection of the uterine appendages has resulted in such general peritonitis as to cause death, but I myself have never been called to such a case. In fact, it is more than likely that such an instance would have had summoned to it in consultation a physician and not a surgeon. I have been called to cases, which I shall note more as I go on, where the general peritonitis has been so great as to necessitate the practitioner calling me for surgical interference, he having recognized the probable nature of the case; and where I have operated, removing the cause of the disease, with the result of being uniformly successful in such cases.

It is, therefore, perfectly intelligible to find men who are in general practice putting on record their belief that the great majority of cases of acute inflammation of the uterine appendages end in complete recovery, and there can be equally no doubt that a very large number of them do end in this way. But these are not the cases that are seen by special practitioners. The patients who come to me are chiefly those who have recovered from the acute stage and passed into a condition of chronic invalidism. This class includes those who suffer from chronic ovaritis, chronic salpingitis, even simple adhesions of these organs, and who are always worse still if the adhesions are complicated by occlusion of the Fallopian tubes and their distension, either by serum or by pus or by bloody fluid: and any man who has run through a long experience of general practice may easily call to mind fifteen or twenty cases of the kind that he has seen, all of which ended under his care in apparent recovery: that is, the acute stage passes off and the patients rise from their beds, after a more or less prolonged convalescence. But he does not see these twenty cases ten or

twelve years afterwards. Those of them in whom the damage has been sufficiently great to cause prolonged suffering seek relief from the special practitioner at the hospital, or in his consulting-room; and therefore it is that the shield concerning which so much discussion has arisen is found to have both a gold and a silver side, and has to be looked at from both sides before a reasonable understanding can be arrived at.

Let me illustrate what I mean by giving a typical instance as it occurs almost daily in consultation in my out-patient room and in my private consulting-room. A patient sits down and tells me that she is thirty years of age, and began to menstruate when she was fourteen. She was perfectly well, and her periods quite regular until she was married at twenty-two; that a few weeks or months after marriage she had an ill-defined illness, which kept her in bed for a few days, or it might have been two or three weeks. In the latter case she was so bad that she was attended by her family doctor, and in a pronounced instance she was told that she had had an attack of inflammation of the bowels, but from that moment she has never known what it is to be well. Or it might be that she dates her illness from an attack of milk fever after her confinement, or inflammation after a miscarriage. After a little more enquiry you get a starting-point, and the further history is that since then she has been able to go about, but has never been free from pain; this pain is emphasized if she over-exerts herself or if she walks any distance. The pain is greatly intensified at the menstrual periods, and if the tubes are occluded (it is more than twelve years since I first pointed this out as a simple fact, and my observations have received ample confirmation from others) she has premenstrual pain of an agonising character. That is to say, she knows she is going to be unwell from the fact that exhaustive spasmodic pains of an expulsive character come on two or three days—it may be even a week—beforehand. This pain, curiously enough, is somewhat relieved by the onset of the flow. Then we have the story that from the time of the original inflammatory attack her periods have been far more profuse than they ever were before, lasting from six to seven days or even ten or twelve days, instead of the habitual three, four, or five days; the amount of loss being correspondingly increased. So long as she can keep her bed she is fairly well, but if she has to go about and make a living, or do the domestic drudgery of the lower classes, her life is one prolonged agony. Finally, if she has to submit to marital life her sufferings are enormously increased; and, although it is by no means a uniform condition, it is almost certain that if there be peri-uterine adhesions, still existing chronic inflammatory change of the uterine appendages, still more if there be occlusion and distension of the Fallopian tubes, the marital act is associated in the mind of the patient with something little short of horror.

In the acute stage we have, of course, the onset of the ordinary symptoms of inflammatory change accompanied by fever, increase of general temperature, and increased pulse frequency. When the patient is seriously ill symptoms of general peritonitis will be present, the abdomen distended, some tenderness all over the abdomen on pressure, the position of the patient being, as usual in such cases, with the knees drawn up. When a pelvic examination is made the uniform result is that the roof of the pelvis is found occupied by firm unyielding adhesions, and it is very rarely that anything like fluctuation can be discovered. After the acute stage passes off, and the inflammatory effusion diminishes, the outlines of the various organs can be easily determined on either side of the uterus; a lump is to be felt behind and somewhat below the fundus on either side of it; this lump is excessively tender on pressure, and if we have ascertained that this is the seat of the premenstrual pain a complication of the Fallopian tube may be assumed as certain. Dr. Sinclair agrees with me concerning the rarity of general peritonitis as a sequence of the acute stage of inflammation. He thinks that the adhesions, which unquestionably form, stave off the inflammatory process from extending into the general cavity of the abdomen; but this does not occur in the other forms of peritonitis arising from pelvic trouble, as, for instance, in the puerperal, in which, as a matter of fact, these adhesions are not of uniform occurrence. Probably not more than half of the instances in which I have operated have possessed them. Further he says, "If the disease reaches the fimbriæ of the tube it almost certainly goes on to produce perimetritis and ovaritis. There is no leap from one point to another; the susceptible tissues are continuous. It is the custom to speak of an interval between the ends of the tubes and ovaries, and to designate the acute affections of the tissues of the intervening space as peri-oöphoritis. Anatomically there is an interspace, physiologically there is none; and clinically there is no distinct form of disease arising from the inflammation of the particular portion of the peritoneum about the ovary. There is no peri-oöphoritis without inflammation of the ovary itself, and more or less extensive perimetritis; and the symptoms arising from this extension of the inflammation are the symptoms due to inflammation of the pelvic peritoneum and of the ovary." With this I entirely concur, but it is wholly inconsistent with his own explanation of the facts. The real position of a man like Dr. Sinclair is that, believing in the influence of the gonococcus, he is obliged to devise some other explanation of the rarity of the extension of the inflammation into general peritonitis. My belief is, and always has been, that whether or not the poison of the gonorrhœal infection be a gonococcus or, as I firmly believe, some still unknown agent, it attacks generally mucous surfaces and not the serous. I therefore cannot adopt his evidence that such cases

are wholly due to the extension of the inflammation through the mucous and peritoneal coats of the tube, the adhesion of the ovary, and the destruction of the fibrous tissue of the ovary; the serous coat of the peritoneum having some power of resisting this particular poison, which power is, of course, inconsistent with the germ theory.

There can be no question that such inflammatory affections are spread over the mucous surface of the uterus, and actually pass along the tubes to the ovaries, and proceed through the inflammatory change in the mucous surface, which is of necessity the cause of destruction of the epithelium; and if the inflammatory change is sufficiently severe to destroy it completely it is not reproduced. I have often shown that this has a most important bearing on the question of tubal pregnancy, and it is also indubitably the process which brings about sterility in many cases where the disease proceeds no further, and it is also the preliminary step to the agglutination of the surface at the uterine orifice of the tube necessary to the occlusion and distension of it in the more advanced form of the disease.

Simple tubal dropsy has been known for a long time, and the fact that it is generally bilateral is suggestive that it is attributable to the inflammatory process. The distended tubes seldom reach to a large size, and in the majority of cases where they are described as having reached such a size as to rival and demand the treatment of ovarian tumours are mostly open to the suspicion of inaccurate description. The appearance of a parovarian cyst with a huge elongated and hypertrophied Fallopian tube spread over it would easily deceive an inexperienced or careless observer. But the tube and the peritoneal covering of the cyst can be stripped off by the fingers, showing that the relation of the tube to the cyst is merely that of superimposition. The exaggeration of the tube is due to increase of blood supply. There is, however, one case given by Dr. Peaslee in his book on "Ovarian Tumours" about which there can be no doubt. It contained 18lbs. of fluid, and would have been removed if the patient had recovered from a tapping which unfortunately was performed upon her.

Further up the tube the inflammatory change affects the mucous surface of the fimbriæ, and ends in two ways—either by agglutinating these fimbriæ together into a club-like mass at the extremity of the tubes, or, what is far more common, fastening them on to the surface of the ovaries—a result of very frequent occurrence, which is facilitated by the relations of the infundibulum to the ovary. These relations are far more intimate than is generally imagined. Fig. 52 (p. 384) gives a perfectly exact representation of the organs, but in order to display them their relations have been destroyed, for the fimbriæ are always in close relation to the ovary, and the tubes, as I have said, curl over and around the ovary, so

that the infundibulum is in contact with the lower and posterior surface of the ovary, the axis of which is often nearly vertical generally, but not always. Adhesion, as I have said, probably occurs at the menstrual periods independently of ovulation, and I think it more than probable that not more than one in ten of the ova shed by the glands really enter the tubes. The rest drop into the peritoneum and die there.

The largest collection of fluid which I have seen in an occluded Fallopian tube occurred in the following case, the more remarkable in that the disease was unilateral.

E. E. T——, aged twenty-eight, was placed under my care by the late Mr. Watkin Williams, of this town. She had been married, but had been obliged to divorce her husband for misconduct. It is more than probable that gonorrhœa had been communicated to her about five years before I saw her. From that date she had suffered from intense pain during the menstrual period, and had become very much emaciated. She had been under a great many doctors without obtaining relief. I discovered a small cystic tumour behind and to the right of the uterus, freely movable, but very painful when moved. I advised its removal, and this I undertook on May 23rd, 1879. I found it to consist of the right Fallopian tube, distended by about a pint of clear serum. The infundibulum was glued on to the right ovary, and the uterine part of the tube was distended like a tortuous sausage, the greater part of the cyst being made from the outer half of the tube. I removed the tube and the left ovary. She made an easy recovery, is now in robust and perfect health, and has married again.

Dr. Saundby examined the fluid removed, and gave me the following report upon it:—"Specific gravity, 1·014; reaction alkaline, pale greenish colour, clear, with scanty greyish deposit; contains about three-fifths of its volume of an albuminous body, having all the characters of serum-albumen. After removing the albumen, the filtrate precipitates with mercuric nitrate (urea?) and with argentic nitrate (chloride of sodium?). The microscopical examination showed only a few indifferent cells."

Another point in the history of all these cases is that they are sterile. In the typical history of which I have just spoken it will be always certainly found that from the point at which the initial inflammatory illness gives the date of the whole trouble there has been no impregnation. At least, there has been no fecundity. Women are extremely apt to speak of miscarriages when no such event has been possible. Sterile women are generally extremely anxious to be fecund, and the wish is father to the thought that they have been pregnant and have miscarried when nothing of the kind has occurred. They will tell you that they missed one period or two and then had a miscarriage, and so accustomed have I

become to this kind of story in the cases in which I am now speaking that I disregard all stories of miscarriages unless they are confirmed by the statement of some competent person who has seen indubitable evidence of foetus or ovum. A very characteristic history of the post-puerperal case is that within a year or eighteen months after marriage the patient had an attack of pelvic trouble, and has had no children since. In fact, sterility, next to the presence of pain, is a feature of all cases of chronic inflammatory change of the uterine appendages. Upon this point I have, in all my writings upon this intricate subject, advanced indubitable proofs, and yet it is amazing to see with what persistence my critics return to the argument against the performance of operation upon these cases, that it deprives the patient of the power of reproduction. The disease has already done that. Upon this point Dr. Sinclair says: "But by far the most important consequence may be summed up in the word *sterility*. This is by far the most common result of one or other of the anatomical changes produced by the gonorrhœal infection. *A woman who has suffered from gonorrhœal perimetritis is barren.* Sterility is the result of one or more of the anatomical changes which have been referred to, and co-exists with one or more of the groups of symptoms which we designate by various names, as if they were distinct diseases. It is easy to see how the inflammatory process resulting from gonorrhœal infection should have sterility as one of its consequences, whatever other clinical signs or symptoms of disease might be produced. My belief is that perimetritis must almost necessarily be followed by sterility. In this condition we see the possibility of fruitful intercourse attacked and destroyed; the ova are hindered from even leaving the organ which is their source, and consequently their impregnation by the male element becomes an impossibility. Even in cases which do not extend to perimetritis we can conceive the condition of the Fallopian tubes may be rendered such as to make sterility an infallible result. The tubes become sealed at either end as the direct consequence of the inflammatory process, and even when the canal remains pervious the lining epithelium must be so injured or destroyed that the passage of the ovum is prevented. In such cases of comparatively slight damage there is danger of the congress of ovum and sperm resulting in some other form of ectopic gestation.

"The sterility which results from gonorrhœal infection may be produced by the first acts in consummating marriage, or pregnancy may occur and end in abortion, produced by gonorrhœal disease of the uterine mucous membrane, or pregnancy may go on to the full term and be followed by a gonorrhœal puerperal illness with perimetritis. This perimetritis then produces the anatomical changes on which lifelong sterility depends. Whether abortion is ever produced by a gonorrhœal disease of the foetal or maternal

coverings of the ovum cannot be as yet said to be proved, but there is ground for a strong presumption in favour of the existence of a gonorrhœal abortion and a sterility *post abortum gonorrhœicum*. The sterility produced by disease originating directly after marriage is a familiar and common occurrence." These words of Dr. Sinclair are entirely confirmed by my own large experience. Let me give a few illustrative cases:—

E. C——, aged thirty-two, was married at seventeen years of age, and had her first child when she was eighteen, and her second in the following year. She was quite well until 1876, when she had a smart attack of inflammation of the pelvis, and ever after that she had extreme pain at her periods, when she had to remain in bed for several days; and she described her sufferings as amounting to agony, and resembling labour-pains more than anything that she knew of. She was seldom free from pain in the back, and for the last three years she has been utterly unable to endure married life. I found the uterus slightly retroverted, and on each side of it there was a distinct mass in the position of the ovary, large, fixed, and extremely tender. She had been under a great variety of treatments without the slightest benefit. On October 5, 1880, I made an exploratory incision, and found both ovaries adherent in the cul-de-sac, the infundibula of both tubes occluded, and the tubes themselves distended into cysts. The whole of the organs were matted together, and the operation for their complete removal was extremely difficult. The amount of fluid in each tube was about two ounces. She made an uninterrupted recovery from the operation until the monthly period after, at which time she had a small hæmatocele on the right side, coincident with a slight menstrual appearance. From this, however, she speedily recovered, and on February 17th last I found the uterus perfectly free and normal in direction. I last saw her on March 26th, and found her in perfect health, absolutely free from pain, and she told me that she had seen no appearance of menstruation since November, and that marital functions had been resumed without the slightest pain.

H. S——, aged thirty-seven, had been married seventeen years, and had only one child, fifteen years ago. She did not recover well from that confinement, and ever since had menstruated too often and too profusely, being rarely a fortnight clear. I found the fundus large and tender, somewhat anteverted, and what I regarded as the ovaries formed two large masses low down, and somewhat behind the uterus. For a long time past sexual intercourse had been quite impossible on account of the suffering it caused her. Dr. C. H. Phillips, of Hanley, who placed her under my care, had exercised a large amount of ingenuity in her treatment without any benefit, and from February till August, 1880, we conducted further treatment equally in vain. On

August 3rd I opened the abdomen, and found the ovaries large, completely adherent in the cul-de-sac, covered with lymph, and having the infundibula of the tubes occluded. The tubes were distended into large cysts, each containing from four to five ounces of clear serum. The organs had to be very carefully detached, as the adhesions were extremely firm, and the hæmorrhage during the operation was tolerably profuse. Her recovery from the operation was rapid and easy, and the only distresses she encountered were the climacteric flushings. In May last Dr. Phillips sent me a most satisfactory account of her condition.

A. S——, aged thirty-eight, had been twice married, and had had five children by her first husband, the youngest being

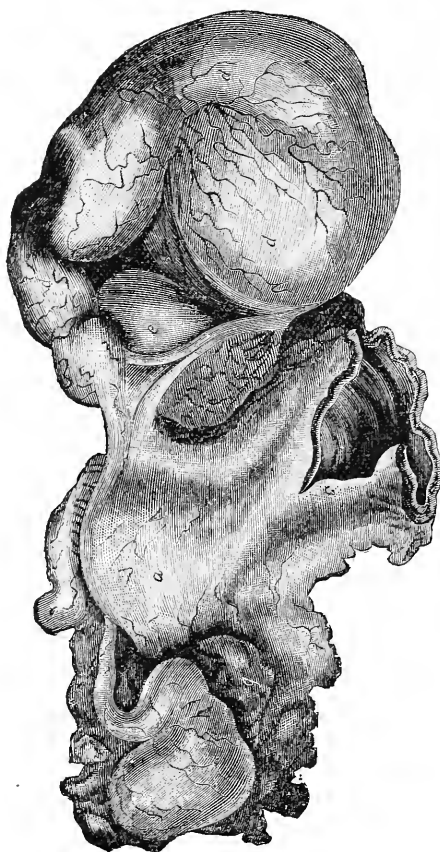


FIG. 52.—Bilateral hydrosalpinx (after Hooper, from Arthur Farre, *Encyc. Anat. and Physiol.*):
a, uterus; *b*, vagina; *c*, os uteri; *d* and *f*, Fallopian tubes; *e*, ovary.

twelve years of age. She has had no children by the second husband, to whom she has been married six years. After her

second marriage she seems to have had an attack of pelvic inflammation, and ever since she has had intense pain at her periods. She referred this pain distinctly to the region of the ovaries. For somewhere about three years she had been wholly unable to submit to intercourse, and her domestic life was thereby rendered extremely uncomfortable. I found the uterus to be normal in position, and on each side of it I found a mass situated quite low down, and having characteristics exactly like those in the two cases given above, so that I had no hesitation in making

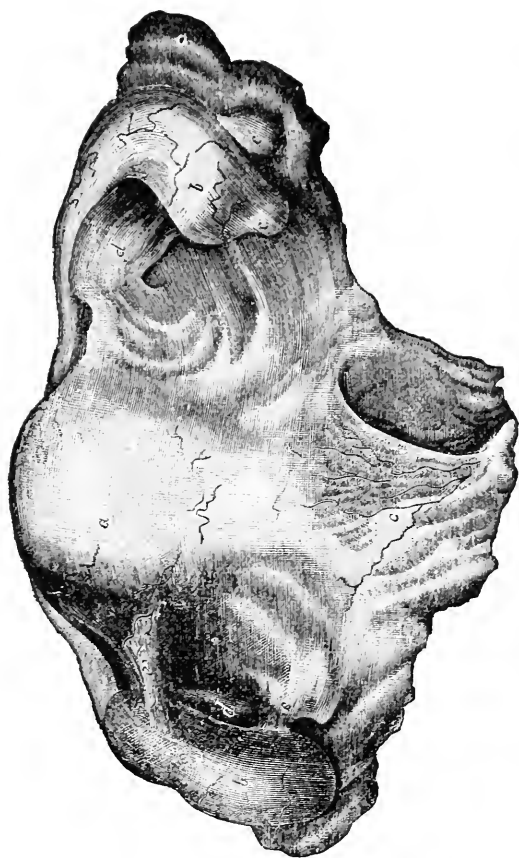


FIG 53.—Occluded and adherent Fallopian tubes (Arthur Farre, after Hooper) : *a*, uterus ; *b*, Fallopian tubes ; *d*, *d'*, ovaries ; *c*, *c'*, bands of adhesion.

up my mind that she had occlusion and distension of the tubes. Dr. Cameron, of Bilston, who had placed her under my care, sent her to me with a statement to the effect that he was perfectly sure that nothing but an operation would relieve her. This I performed upon May 21st, and found matters exactly as described in the last

case. Her recovery was rapid, and the relief immediate and complete.

In some cases we find that the contents of these closed tubes consist of pus or menstrual fluid, both of which I can instance from my experience in the following cases.

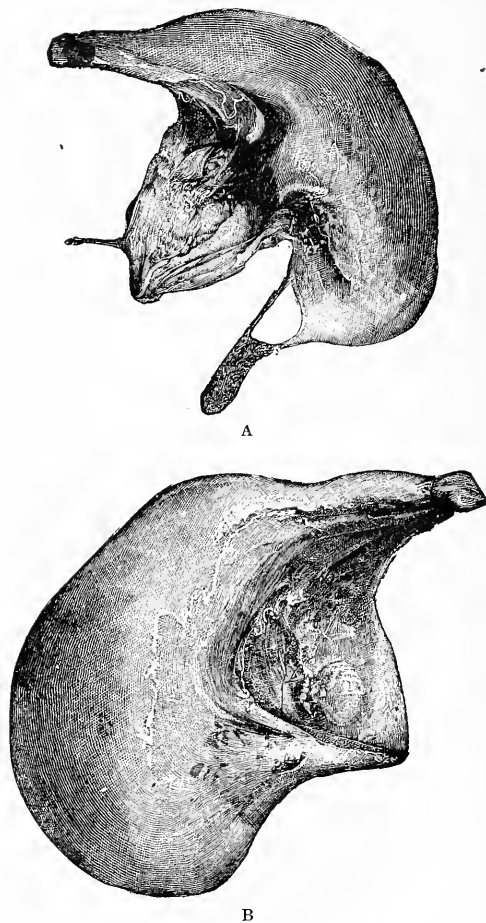


FIG. 54.—Right (A) and left (B) Fallopian tubes and ovaries, removed by abdominal section from a patient aged thirty, who had suffered early in her married life from gonorrhoea. The large bulbous masses are the Fallopian tubes occluded and distended with serum (hydrosalpinx), the shriveled ovaries being shown in the convexity of the tubes. (From a photograph slightly reduced. Preparation now in Museum of Royal College of Surgeons.)

At the meeting of the Société Anatomique, held on January 16, 1880, a case of pyosalpinx was narrated from Dr. Bernutz's

service at La Charité. The patient was aged twenty-nine, and was admitted with very severe symptoms pointing to pelvic inflammation, and subsequently peritonitis. She died four days after admission, and on a post-mortem examination suppurative peritonitis was found to have spread up from the pelvis, having arisen from the rupture of a tubal abscess. The following is a description of the parts:—

“The tubes extended one on either side, and were the seat of the principal alterations. The internal half of each tube was healthy, and its direction normal, but the outer half presented three or four dilatations, varying in size, the largest being situated at the outer extremity, being formed by the occlusion of the pavilion, so that there was no opening into the tube, which was distended with pus. These dilatations communicated one with another, and the internal mucous surface was smooth and softened, but otherwise normal. There was no communication between the uterus and the tubes. The ovaries did not occupy their usual situation, being both displaced downward and embraced by the concavity of the tube, making with this a largish mass. On the left side there was a peculiar arrangement: a cyst occupied the pavilion of the tube, of the size of a hen’s egg, which seemed to be directly continuous with the cavity of the ovary, and the two cysts were entirely empty. The internal surface of the tube was smooth, while that of the ovary was very rough and much reddened, the difference being distinctly marked by a line of division of the two structures. The ovary was not greatly enlarged, and upon its posterior surface, toward the middle, was found a small rupture through which the contents had been extravasated into the peritoneum.”

M. Bernutz remarks that in all probability the suppuration of the tubes and left ovary was of ancient date, and that the fatal peritonitis was undoubtedly due to the perforation of the abscess into the peritoneum. He does not give any explanation or history of the pyosalpinx. The case, however, is to me an extremely interesting one, for it illustrates exactly the same conditions as those seen in the case narrated above, and I think there is little reason to doubt that, if the patient had been seen earlier in her history, the symptoms would have been found sufficiently severe to warrant an abdominal section; and, if that had been done before the rupture, not only would the patient’s life have been saved, but her disease would have been cured. Even after the rupture of the cyst and the onset of peritonitis, had the case been under my care, I would have opened the abdomen without the slightest hesitation, have cleaned out the cavity, and removed the cause of the disease. I have had numerous cases in my recent practice where such a proceeding—which would have been regarded as madness three years ago—has had the most brilliantly successful results.

As another instance of pyosalpinx I may give the following:— M. F——, aged twenty-six, had been, ever since the age of seventeen, living an immoral life. About three years ago she suffered from gonorrhœa, which was followed by severe pelvic inflammation, and ever since that time she had suffered from severe menstrual pain. About six weeks previous to my seeing her she had been exposed for a whole night to extreme cold, and after that suffered from great pelvic pain. She was placed under my care in March last, by Mr. John Green, of this town. I found her suffering from all the symptoms of pelvic suppuration, and there was a fluctuating pelvic tumour on the left side of the uterus. This I diagnosed to be the left Fallopian tube distended with pus. I opened the abdomen on March 28th, and found my diagnosis correct. It was, however, quite impossible to remove the tube, and I therefore had to content myself with emptying it, dragging it up to the wound, securing the two openings together by a continuous suture, and fastening in a drainage-tube. This was kept in for some weeks, and she made a satisfactory recovery. Her menstrual suffering, however, is quite unrelieved, and therefore the cure is only partial. It could only have been made complete by the removal of both tubes and ovaries, but this was made quite impossible by the dense adhesions formed by the previous inflammation. In such a case, of course, there is not the slightest hope of her ever becoming a mother, though, as she has left her irregular life and has been married for about a year, this would be desirable. As it is, she will certainly remain a sufferer until she reaches the climacteric.

All that I have said concerning these cases and the method of their origin, so far as gonorrhœa is concerned, has already received the most abundant confirmation in this country, in Germany, and in America. As I have already said, by far the best paper that has yet appeared on the subject is that by Dr. Japp Sinclair already quoted, and I have no hesitation here in adding a long quotation from it for the purpose of showing how completely the whole of my observations are now established. Speaking of gonorrhœal infection, he says: "The process extends to the Fallopian tubes, ovaries, and peritoneum. Why this extension should occur in some cases and not in all I cannot suggest any explanation further than is implied in the vitality of the infecting organisms and some idiosyncrasies in the individual, the consequently variable effect that might be anticipated from the initial force of the onset, and the nature of the soil, favouring or otherwise the development of the gonococci. In any complete investigation of this point it would also be necessary to eliminate, as far as possible, all cases in which the gonorrhœal infection had already occurred even in an almost imperceptible 'creeping' form. Between the virgin adult and the subject of *colica scortorum* there must be

every shade of susceptibility. It cannot be a question of the narrowed condition of the uterine canal, preventing the free flow of the discharge away from the orifice of the Fallopian tubes, for we see some of the worst results of extension of the process in women who have been recently confined, or in whom there is some subinvolution of the uterus with wide canal. Whatever be the cause of variation, we find frequently that acute gonorrhoea spreads along one or both Fallopian tubes. Here the process must destroy the ciliated epithelium, and give rise to a collection of fluid if the canal does not remain patulous. We do not know by direct observation what goes on in the tubes, but we know that the processes of tissue reaction against the invasion of the fungus give rise to hydro- and pyo-salpinx, and the permanent closure of one or both ends of the tubes; and we may suppose that occasionally the changes are so slight as to permit of resolution, and the return to a comparatively normal condition. We see something similar in the glands of Bartholini, where the disease in an almost closed cavity gives rise to pain and swelling, ending usually in resolution with a mild chronic disease of the part, but sometimes in complete closure of the duct, and the formation of abscess."

Whether the process of gonorrhoeal disease, having once reached the tubes, ever stops there it is hard to say. The probability is that it always extends more or less to the peritoneum. We know that salpingitis causes enlargement and lengthening of the tubes. It may, therefore, produce adhesions by peritonitis originating in the extension of the disease perpendicularly through the walls of the tubes, just as peri-urethral phlegmon may result from urethritis; but it much more likely that the peritonitis results from the continuation of the process in the same way as it has so far extended, or by the discharge of fluid from the end of the tube. If there is a special acute gonorrhoeal form of peritonitis, it spreads, as a rule, very rapidly over the pelvic peritoneum. The pain produced by the extension to the peritoneum is sometimes the first thing that attracts attention to the nature of the disease. The process has extended so far painlessly, but almost suddenly an aching begins in the pelvis, rapidly increasing to severe pain, and on examination being made, perhaps within twenty-hours after the first symptom, the whole pelvic floor is found to be hard and immovable. In cases in which the peritonitis is set up by a sudden discharge of a fluid containing pus or mucus from the free end of the Fallopian tube, it is conceivable that death may rapidly ensue from the shock. How violent the onset of the stage of peritonitis may be without any symptoms of shock is illustrated in a case now under my observation, of which details will be given later. The temperature chart is before me, and at the time the patient had to take to bed, after complaining for two days, the temperature in the axilla was 103.4° , and in the vagina

105·2°, the constitutional symptoms being in proportion to the pyrexia.

When the disease extends to the peritoneum, it immediately attacks the serous covering of the ovary, and extends some way within the capsule. It gives rise, by the tissue reaction, to very considerable enlargement of the ovary, and, as the process of inflammation dies out, to thickening of the covering of the ovary, and to more or less extensive adhesions to the neighbouring structures. How ovarian abscess may occur at a very early stage it is by no means difficult to explain. We know that the ovaries of adult women often present considerable cysts or cavities without producing any symptoms, and while continuing to perform their functions in a perfectly physiological manner. These are the changes in the ovaries which are so often pointed to as a justification for their removal when no better justification is, or can be, forthcoming. Now supposing one of these cysts, with limpid contents, is situated near the surface of the ovary when the gonorrhoeal process begins, its walls or a portion of them must become involved, the fluid contents increase and become turbid, and the cyst must either burst or become an abscess, just like the closed gland of Bartholini. Some such severe complications and accidents are required to explain the extreme amount of pelvic disease, and the persistency of the inflammatory processes in a considerable proportion of cases. While the process can be observed begining, and, as far as touch is a criterion, ending in a few weeks in the milder cases, in the severer sort very grave symptoms are set up, and the disturbance of function, along with signs of anatomical changes, continues for months and even for years. In order to afford confirmatory evidence of the exactness of the descriptions which I have given in previous cases, and of the processes which are found in action in these dreadful diseases, I cannot do better, and I need not do more, than quote a case from Noeggerath and one from Sinclair:—

“Mrs. M——, a native of Boston, had been, when I first saw her, married for five years to an advocate in New York, who had about one year before his marriage undergone two months’ treatment for gonorrhœa. The wife, who before marriage was a type of robust health and beauty, began soon after marriage to have ailments; she remained sterile, and suffered from pain at the beginning of her menstrual periods, and, what had never before occurred to her, began to have a slight fluor albus shortly before the periods.

“After a year she consulted Dr. Marion Sims, who performed on her his operation of incision of the cervix, with the object of curing the sterility. This proceeding was followed by such severe hæmorrhage as to necessitate tamponade of the vagina. On the following days pain began, and gradually increased to an enormous

severity. The doctors in attendance found that the cause was an acute perimetritis. The patient was confined to bed for two or three months, and since that time she has never had a day's good health. She consulted, one after the other, the principal gynaecologists of New York and Boston: by one she was cauterised for ulcer of the cervix; another applied a large blister to the hypogastrium on account of chronic metritis; and a third made her wear an intra-uterine pessary for two months. A careful examination revealed the following facts: the uterus was anteverted, and but slightly movable; the left ovary was small, hard, and firm, and fixed in the pelvis by adhesions; whilst the right ovary, lying deeper, seemed to be greatly swollen, rounded, and softened. Both ovaries were intensely painful to touch. The vagina was reddened, and bathed in a muco-purulent discharge, and there was catarrh of the glands of Bartholini. This lady had suffered inexpressibly during the last four years, not only at the menstrual periods, but during the intervals. The sleep was broken. . . . I gave a very doubtful prognosis, and as soon as I saw that neither narcotics nor absorbent medicines produced the least effect upon her condition, I advised her to visit a German watering-place. My advice was concurred in by a gynaecologist in Paris, and the patient, on my strenuous recommendation, spent two seasons at Kreuznach. On her return she felt in many respects better, but by no means completely restored to health.

"This patient ultimately left New York on account of symptoms of commencing tuberculosis, and the author could learn nothing of her subsequent history."

This case illustrates, first of all, what I have had repeatedly to deprecate—the interference with these cases by mischievous and improper measures, such as division of the cervix, or the introduction of ring, stem, or other pessaries. When I have had occasion to allude to such cases, and to give the names of the practitioners who performed these operations, great wrath has been expressed, as in the case published in the *Medical Times and Gazette*, in answer to a challenge by Sir Spencer Wells. When, on the other hand, I have refrained from giving names, in order to prevent the identification of the cases, and to spare the feelings of those who made the mistakes, a great deal of incredulity has been expressed as to the existence of them. It find it impossible to satisfy a certain class of critics.

Let me close the narration of cases here by quoting one instance at length from the paper I have alluded to in the *Medical Times and Gazette* of September, 1884, because it shows that so long as one is ignorant of the real nature and frequency of these cases danger is certain to arise. This was the case in my own instance, as will be seen from the story. My first associations with this case were those of ignorance; then, having obtained light, I advised

what ought to have been urged at first. It was refused, and those who, unlike myself, had not been converted to the true knowledge of these cases were obstructive, and secured a prolonged suffering for the poor patient which was altogether unnecessary, as will be seen by the outcome of the story:

Miss E. L.———, came under my care in October, 1873. She was then twenty-eight years of age, and had been a sufferer from the time menstruation began, at the age of fifteen. Her menstruation had been fairly regular, but had been always profuse, intensely painful, and was accompanied by the passage of shreds of membrane almost every month. A first she obtained relief when she passed the shreds, but at the time I saw her, even when they did pass, relief was not obtained. The uterus then was hard, ante-flexed, and somewhat larger than normal, as the sound entered three inches. She informed me that for three years she had been from time to time under the care of Mr. Spencer Wells, by whom a variety of treatment, by pessary and otherwise, had been employed, but only with the result that she became worse instead of better. She had an intercurrent leucorrhœal discharge, which was occasionally very profuse.

I regarded the case at the time as one of chronic endometritis, and I recommended that the uterus should be dilated and the mucous surface destroyed by chromic acid; and this treatment I carried out within the next week. For some considerable time after this she greatly improved, and she could get about in a way she had not been able to do for three years. She came back to me in October, 1874, as bad as ever, if not worse. The menstruation was now scanty, and only small fragments of skin were passed; but her pain during the period was intense, even inducing vomiting, and entirely preventing her from walking. The intercurrent leucorrhœa was very considerable, and therefore I tried intra-uterine applications of strong carbolic acid, with a long list of internal tonics, for twelve months, and during that time she slowly improved so much as to be able to endure one of Mr. Spencer Wells's antelexion pessaries. In October, 1875, the leucorrhœa had almost gone, her pains were very much relieved, and she was able to get about for a fortnight in each month, but during the other fortnight she was very easily fatigued, and pain was soon brought on by exercise.

She came to me again in April, 1876, after having had three very profuse periods in February, March, and April, but with less pain and more intercurrent leucorrhœa. I therefore resumed the carbolic acid treatment, with relief to her, throughout June, July, and September. In November, 1877, she again returned to me, telling me she had been fairly well until the previous May, but in June something seemed to go wrong again. Her periods became very profuse, lasting from ten to fourteen days, intensely painful,

followed by a profuse yellow and very offensive discharge. The former treatment, with some variation, was resumed and carried on until December, 1879, but even then, although the treatment was to a certain extent successful, she was totally unable to walk more than a few hundred yards or to stand for more than a few minutes. I did not see her again till September, 1880, when I found that, although she had been somewhat better in the spring, she was worse in every way. For the previous four months she had been rarely free from the menstrual flow for more than a few days at a time, and her last period had gone on for three weeks. Looking back at the experience of the previous seven years, during which I had done my best to relieve her without success, recognizing the fact that her existence was a burden to herself, and a serious tax on her relatives, I advised the removal of her uterine appendages. My proposal was discussed at great length with some medical gentlemen who were concerned in her case more as friends than as responsible advisers, and also with a number of her relatives, and it was ultimately decided against. When this decision was announced to me, I declined to undertake any further responsibility in the case, and I asked her friends to place her under some other care.

What happened to her between that time and June, 1883, I do not know, and have never cared to inquire, but I have every reason to believe that many and able efforts were made to relieve her. But this I do know: that whatever was done was fruitless, for she came back to me at the latter date, a woman of thirty-eight, but looking more like sixty, thin almost to emaciation, with a haggard, pinched face, hair almost white, constantly confined to the recumbent position, and never free from pain. She asked me to resume the responsibility of her case, and do with her as I thought best. On August 27th I performed abdominal section. I found the contents of the pelvis a good deal matted together, the uterus was somewhat above the normal size, both tubes occluded and densely adherent, that on the right side being distended by about two drachms of pus, and in the left a similar quantity of serum. The ovaries were small, cirrhotic, and densely adherent. The operation for the removal of the appendages was a very difficult one, but she made an extremely easy recovery, and went home on September 27th. I saw her on the 8th of April last, looking very well, and she was able to walk a couple of miles. She had not had the slightest appearance of menstruation since the operation, and had only slight occasional pains in the stumps. I have just had a letter from her (July 14th, 1884), from which I take the following sentences:—"I am visiting my married sister, and it is delightful to feel well enough to enjoy the baby and go out to see friends. I often send a grateful thought to you, especially when I contrast my feelings with those I had last year

at this time. Everybody says I have renewed my youth." She remains still (1889) in perfect health.

On looking back upon this case, my feeling of regret is strong that the operation I performed on her at last was not performed ten years before. From what I now know of similar cases I am perfectly satisfied the condition she was in when I first saw her would have absolutely justified the proceeding to which she had ultimately to submit. I cannot, of course, be certain that at that time she suffered from hydro- and pyo-salpinx, but I am certain she was the subject of conditions which led up to them—that she was then the victim of incurable chronic inflammation of the ovaries, and that in all probability what was done to her by Mr. Spencer Wells, by myself, and by others, had only for their effects permanent increase of the mischief, even though temporary alleviation was obtained. This case forms, in fact, a typical example of a large class who are subjected to useless and torturing treatment for years without real benefit, and to whom removal of the uterine appendages comes as the only relief after years of distress and treatment at once expensive and unavailing. At the International Medical Congress, Mr. Spencer Wells said he had only seen one case which justified the operation to which this case was subjected; yet he had seen this case, and, I know, very many quite similar.

Let me just say that this case is rather disconnected with the present discussion of gonorrhœal infection, because there can be no doubt that originally it was a case of simple exanthematic adhesions, and that the pyosalpinx into which it ultimately developed was due to the treatment to which the poor woman was subjected, which, from the beginning of the process in my own hands, through those of Sir Spencer Wells, and probably a dozen others, up to the moment that she was put upon the operating-table and the appendages removed, had been all wrong, and only tended to make the patient worse instead of better.

But in the case of Noeggerath we have an instance of the most eminent gynæcologist of his time, a man whose purity of intention, earnestness of purpose, and skill in diagnosis, put him, so far as my belief and experience is concerned, a long way ahead of any gynæcologist whom I have ever met, making precisely the same mistake. There can be no doubt that the division of the cervix in that case was a most mischievous and ill-judged proceeding; but it was due to the fact that Dr. Marion Sims, at the time of the occurrence of the case, knew nothing about the possibility of gonorrhœal infection and damage to the uterine appendages. But I know that he lived under my own guidance to have a full knowledge of these cases. It also illustrates one of the dangers which has never yet been sufficiently recognized, although in one of my early papers on the subject I emphasized the possibility of

the danger, and I had the support of no less a distinguished pathologist than Dr. Samuel Wilks: that is, the purulent infection of the general system in the chronic stage of the disease of the Fallopian tubes. There can be little doubt, to those who know the course that these cases run, that the sentence at the end of the story of this case is pregnant with suggestive meaning—that the commencing tuberculosis from which this poor woman suffered, probably ending her life, was begun in the gonorrhœal infection of her Fallopian tubes.

Another instance (a case of Dr. Japp Sinclair's) is as follows:—

"A lady, *æt.* 30, who, at the time she first came under my observation had been married two months. Ten days after marriage she was seized with a sharp pain in the hypogastrium, and though she got up and dressed she could not walk, and had to spend some days on a couch. She and her husband returned home owing to her illness, and she then for the first time sought for medical assistance. The pain in the pelvis continued, and she felt ill and had to take to bed. She says she was treated for 'inflammation of the bowels,' and was under treatment four weeks, when she was considered cured. She had hardly attempted to attend to her domestic duties when she seems to have relapsed, but she went on for nearly a month without further treatment. It was then that I first saw her for the first time. She looked very ill, and told me in answer to inquiries that she had lost flesh rapidly since the beginning of her illness. She still complained of a pain in the hypogastrium, in the groin, and round the loins. There was a profuse discharge, she said; but she used to have "the whites" before marriage, only the discharge was now much more profuse, and it was different in appearance. Since her marriage she had menstruated twice, both times very profusely and for a longer time than formerly. On examination I found the uterus was fixed, with exudation which was most marked on the right side, but extended round behind the uterus, and occupied the left half of the pelvis, where the inflammation seemed to have been less intense. It was not very tender on pressure. There was a profuse yellow discharge, which bathed the external parts, but did not appear to have set up any intense inflammation about the vulva. I obtained some of the discharge for examination, and afterwards found the diplococcus in the characteristic relations, but the microscopic appearances were never those of a gonorrhœa in the acute stage.

"I had an interview with the husband, and obtained from him a rather remarkable history. Seven years ago he became affected with gonorrhœa for the first time, and appears to have had a very bad attack. He was in the hands first of a quack, and then of several medical men in succession, and appears to have got cured about twelve months after the first symptoms of the disease. He had

been circumcised in his early youth or infancy, and there remained two sinuses in the foreskin, one of them running parallel to the urethra, at the side of the frenum, and the other placed rather more transversely. The former was about an inch deep, and the other was much more shallow. Ever since the attack of gonorrhœa these sinuses had remained moist, and were sometimes irritable; he could then squeeze out a little moisture or a tiny drop of turbid fluid from them. Soon after the gonorrhœa was cured the patient married. In the course of the first year his wife had a child, and died of puerperal fever. The child survived, and was under medical treatment from its birth; but as he himself had to be abroad on business, and, on learning about the death of his wife, remained away for several years, he could not give details about this period.

"He never saw any sign of gleet since his final cure before his marriage, but about twelve months ago, owing to the irritation caused by the deeper sinus, he consulted a surgeon, who slit open and cauterized the canal. The smaller one was let alone.

"Both husband and wife were perfectly well to all appearance at the time of the marriage, two months ago, and the illness from which the wife is suffering came on without any apparent cause. But since her illness the husband has begun to suffer from urethritis. It came on four weeks after marriage, and at the time of my first interview with him it had developed, though under treatment, into a rather acute urethritis, and it ran the course of a moderately severe attack of gonorrhœa. As he had already been under treatment for three weeks or more, I was not surprised at being unable to detect gonococci in the discharge, and I entirely failed to discover any suspicious micro-organism in the minute specks of fluid which he could press from the orifice of the small sinus.

"The question arises, then, Whence came the infection to the woman? Of course, some accidental contact with a gonorrhœal poison is a possible explanation, but it is a marvellous coincidence that a woman of thirty should have escaped so long only to become accidentally infected at a time when the infection would be conveyed to her husband. From my knowledge of the facts, I would say that the suspicion that this respectable woman of thirty contracted the disease from another source, just on the eve of her marriage, may be peremptorily set aside. Besides, the infection did not act like ordinary acute gonorrhœa. In the woman the perimetritis came on as soon as the discharge, and the discharge did not readily infect the husband, unless the husband is simply lying. We seem almost driven to the conclusion, therefore, that the gonorrhœal virus lingered in the sinus for years, only to develop actively when it reached the favourable soil of the uterine

canal, and that it spread in the manner characteristic of latent gonorrhoea, but with exceptional rapidity.

"The wife, who has been under constant treatment for over three months, now considers herself well; but though the uterus is now movable, the thickening of the peritoneum is distinct. There is the peculiar loss of elasticity all across the pelvic floor, and the deep-lying sense of resistance. Probably both tubes are ruined, the fimbriae matted together or adherent to the ovary, and the abdominal orifices closed. There may be now no further complication; a sort of resolution is apparently going on, and the patient may escape any of the more serious injuries to her health. But menstruation will never again be perfectly normal, and the closing of the Fallopian tubes can never be undone."

Here we have the story so familiar to those of us who are cognizant with this kind of practice—an attack of gonorrhoeal infection set down as inflammation of the bowels. In all probability no pelvic examination was made, and no suggestion entertained of what the real state was. Then, of course, the patient gets well of the acute attack, her temperature drops, resumes a more or less normal condition, and she has what many recent writers have affirmed a recovery from the disease. We know that a great many of these cases do recover, but they recover only in the sense of getting out of bed and going about: they never have the disease cured, which point the subsequent history of Dr. Sinclair's case clearly indicates. Women such as the poor patient was at the end of Dr. Sinclair's narration go on living over a gunpowder magazine. A chill, a marital excess, an over-taxation of strength during a menstrual period, or any one of fifty other accidents may at once occur to put her in such a condition as to risk her life. Precisely such a kind of case is emphatically illustrated by the papers of Dr. Kingston Fowler and Dr. Lewers, of mysterious attacks of peritonitis, so called idiopathic, occurring in women with histories like this, often in the course of childbed, and, after a variety of countless treatments, possibly add unnecessarily to the statistical results of puerperal peritonitis. If the frequency with which these cases occur could only be drilled into the minds of the general medical public we should have an enormous number of lives saved by a simple abdominal section. During the last ten years of the struggle that we have had concerning these recent operations in abdominal surgery the reiterated cry has been made against myself and others that we do unnecessary and unjustifiable operations. On the contrary, not only is this absolutely untrue, but we have constantly occurring instances where we have to record the death of patients owing to the non-performance or delay of operations urgently required. Dr. Sinclair has conclusively shown that such cases as these have a mortality of about 25 per cent. I have, on the contrary, shown that the operation to secure

relief in such cases is attended with a mortality of less than 3 per cent., a statement which will be justified in the detailed discussion of this question further on.

We have now to deal with another small group of cases of chronic disease of the uterine appendages existing in the puerperal condition—that is to say, after either a labour of an ordinary kind at full time, or after the premature ending of gestation in the form of an abortion or miscarriage. But even here we cannot get quit of the terrible influence of gonorrhœal infection, and it certainly will be the most convenient proceeding to discuss the cases in which there can be little doubt that both factors are contributory to the conditions for which the operations are performed.

It is a distressing thing to have to believe that men will inflict the sufferings of gonorrhœa upon their wives within a few days or weeks of the puerperal trials. But however much we may deplore it, it has to be stated as a fact upon which there can be no dispute that we have the most serious complications arising directly from this cause in the majority of instances, and indirectly in a proportion which increases as our knowledge of the facts extends.

Of course, in reciting the histories of our cases we have to be constantly on the alert to prevent the errors of inaccurate narrations on the part of our patients—inaccuracies which are quite as often intentional as accidental—but it must be evident that such inaccuracies will be palliative instead of condemnatory so far as venereal infection is concerned. When, therefore, we get a confession of a husband having possibly conferred a gonorrhœa upon his wife we are at once taken out of the category of “frivolous anecdotes” into the realms of fact. Having, then, established a chain of facts we may assume that their legitimate application may be extended in a large number of instances where we can get no history, or, better still, where we do not think it necessary or advisable to make the inquiry.

In this way I become more and more profoundly convinced that gonorrhœa has to answer for a large percentage of puerperal deaths, which are, without due consideration, put down to puerperal fever. What the mechanism of the process is cannot yet be clearly stated, but I am now in a position to indicate at least three methods, for I have seen them all myself, and have traced them with such clear evidence that I feel there can be no possibility of doubt on the subject, now that I find confirmatory evidence yielded by others.

In 1868 I saw a young girl, as an out-patient at the Clayton Hospital, with a very severe attack of gonorrhœa. It yielded, so far as the vaginal symptoms were concerned, very speedily to treatment, and in some three weeks I lost sight of her, and I saw her no more till I had to make a post-mortem examination of her

body as the victim of puerperal fever. Her peritoneum was full of pus, and I found all the pelvic contents matted round a stinking abscess cavity on the left side of the uterus. This abscess I removed with the uterus and preserved it in spirit in a jar, where it lay for years without attracting my special attention. Her story, as I had it at the time, showed clearly that when she got the gonorrhoeal infection she was either pregnant or became impregnated by the same act. She was delivered as a pauper patient in her mother's house, and died about the ninth day after her delivery. At the post-mortem I put down the suppuration behind the uterus as a part and parcel of the "puerperal fever;" but I have looked again at the preparation and I know better now, for I find it is a tubo-ovarian cyst, and that its rupture was in all probability the cause of the peritonitis which killed her. In fact, she had a gonorrhoeal pyosalpinx on one side, which ruptured in the act of labour and caused her death. It was not a case of puerperal fever at all; and a great flood of light has been shed upon such cases by the recent paper of Dr. Chapman Grigg, as published in the Transactions of the British Gynecological Society for 1887.

Dr. Grigg points out that we have been up to the present time in absolute ignorance of the possible importance of local conditions as causing death by peritonitis after labour, by reason of the paucity of post-mortem examination of such cases. The fact is that when a woman dies after labour the incident causes such distress to everybody, especially to the medical attendant, that as little is said about it as possible, a post-mortem examination very seldom asked for, the cause of death is assigned to some cause which will attract the least attention, and if any investigation is made it is generally with the purpose of discovering some outside source of contagion, such as a case of scarlet fever or erysipelas.

An accidental conversation on my part with Dr. Grigg brought out this important contribution from him, which exhibits clearly how important it is that we should have exhaustive investigations made upon all such deaths. During nine months at Queen Charlotte's Lying-in Hospital there had been 548 deliveries, of which 375 were primiparæ and 173 multiparæ, and in the total there were five deaths. Fortunately they were all made the subject of post-mortem examination by competent pathologists—Dr. Hebb and Dr. Allchin. The first was a primipara, who died by reason of a suppurating ovarian tumour which had been obstructing the passage of the head.

The second case was again a primipara, aged twenty-one. For the first week after labour she did very well, but she became ill on the eighth day with peritoneal symptoms, and died on the twentieth day. The cause of death was found to be old pyosalpinx and follicular abscess of the ovary.

The third case was also a primipara, aged twenty-three. She was delivered on November 1st, and died on the 11th. In this case the relations with other puerperal deaths were such that without a post-mortem examination it would have been put down to puerperal septicemia without question, yet the fatal peritonitis was found to be due to a ruptured ovarian cyst.

The fourth case was also a primipara, aged nineteen. She was delivered the same day as the third case, and died on the 13th. The case was complicated by eclampsia, but Dr. Grigg's comments are of great interest:—"This is a very interesting case, showing how necessary it is, even in ordinary eclampsia, to institute a post-mortem examination. But for the post-mortem, which revealed old-standing mischief of the broad ligaments, the primary cause of the disease of the kidneys would never have been revealed. The inflammation, which evidently originated either in the Fallopian tubes or the broad ligaments, caused an infiltration and thickening of the cellular tissue and subsequent shortening of the broad ligaments, and led to the fatal result. In this opinion Dr. Allechin coincides."

This remarkable testimony should certainly lead us to reconsider our views on the so-called puerperal fever. That four out of the five deaths which constituted the mortality of the hospital for a period of nine months should be proved clearly to have origin in local conditions, and that they should be all primiparous, are two very striking facts. It shows, in the first instance, what a huge cloud of ignorance darkens all that is said and written about puerperal fever, what a necessity there is for our beginning its study in a serious and methodical fashion. Again, we have the great fact in connection with gonorrhœal infection that, so far as married women are concerned, it is associated chiefly with their early married life, and it makes them either altogether sterile or sterile on one side. A unilateral pyosalpinx in a newly-married woman I imagine to be as dangerous a condition as she could achieve. If she becomes pregnant, and the occluded tube is burst during labour, her death is almost certain. How many such cases occur we cannot say, but the fact that an overwhelming proportion of deaths from puerperal peritonitis occur in first labours is a most suggestive fact.

The eyes of some of us are gradually being opened to the enormous importance of conditions which others declare have no existence, or which they declare they have seen only once in a long lifetime. As a matter of fact, these cases occur all round us, and every day. I can remember quite a number of incidents during the last twenty-five years all of which are to be explained by the papers of Grigg, Noeggerath, Japp Sinclair, and Angus McDonald, coupled with my own experience during the last eight or nine years.

Dr. Grigg called me recently to see a young lady who had married (a first husband) when only nineteen. Her husband turned out to be a brute, and gave her gonorrhœa just before or just after her solitary confinement. She nearly died from "puerperal fever," and had recurrent attacks of peritonitis. She led a wretched life up to the age of thirty-three, being a widow for some years and then marrying a second husband, a striking contrast to her first. A diagnosis of old suppurative disease of the uterine appendages was easy, and in the presence of Dr. Matthews Duncan I removed a suppurating ovary and pyosalpinx (in process of making a tubo-ovarian cyst) from the right side, and a chronically inflamed and adherent ovary and tube from the left. She is now (six months after operation) on the fair way to permanent convalescence, and I think her case must have converted Dr. Duncan.

About sixteen years ago I was called to the wife of a commercial man who spent much of his time from home, and who had, unfortunately, acquired gonorrhœa about a month before his wife's confinement. It was not his first by a long way; it was very slight, and he told me he had not attached much importance to it, so he gave it to his wife. She did not suffer much from it, and did not in the least suspect the nature of her discomfort. She was confined (her sixth child), and all went well for about a week, when she developed symptoms of "puerperal fever." This went through a sub-acute process, and involved the suppuration of both knee-joints, both eyeballs, and the subsequent death of the patient after nearly six weeks of torture. It was no "puerperal fever," but gonorrhœal infection.

I know of another perfectly similar case, save that it was not fatal, where one eye was lost, and where double pyosalpinx subsequently (long after so-called recovery) necessitated an operation.

I could also give the histories of a number of cases in which the subsequent pyosalpinx has clearly resulted from gonorrhœa given during pregnancy, and resulting either in miscarriage or in pelvic peritonitis after labour. In some of these cases the action of the poison seems so violent that it enters the uterus, destroys the ovum, causes peritonitis, and kills the patient. In others it stops short at killing the fœtus and sterilizing the mother, rendering her a lifelong invalid—unless relieved by surgical operation. In other cases the infection seems to be quiet until labour is over, then the disease extends through the uterus, and subsequently kills the mother by what is called "puerperal fever."

Of the incidents of the first order Noeggerath gives an admirable illustration.

The first case is that of a lady who was brought to New York in the beginning of 1872 to be under that author's care. When a bachelor the husband had suffered from gonorrhœa, which

required many months for its cure; but it had disappeared for two months before marriage. In answer to the question whether every trace of it had disappeared, he admitted having noticed, after his marriage, an adhesion of the urethral orifice, and to have experienced occasional discomfort in micturition. Ten months after marriage the wife was confined of a healthy child, and since then (eighteen years) she has never become pregnant again. Soon after her confinement she began to complain of pain in the left side and a sense of weakness in the pelvis. Then follows the history of wanderings in search of health from one European health resort to another, and back to America. There were six distinct attacks of pelvic inflammation. Digital examination proved the existence of a mass of exudation in the pelvis, enlargement of the ovaries, and matting together of the pelvic organs generally. Noeggerath evidently despaired of doing any good, and recommended her to visit a Canadian watering-place.

This is a fair example of the half-dozen cases given as illustrations in this portion of his work. They have all these two points in common: that they are incurable ailments, entirely destroying the health and happiness of women who were healthy before marriage; and that they all show a history of gonorrhœa in the husband, which is brought out in a more or less convincing fashion as the cause of the wife's sufferings.

Of the influence of gonorrhœa in inflicting fatal or irreparable mischief immediately on the parturient woman we have evidence almost quite as clear, and as long ago as 1873 Dr. Angus McDonald put the possibility of it beyond dispute, and he may justly be regarded as the author of this important discovery, even though he got the suggestion of it from Noeggerath. I shall extract Dr. McDonald's cases because the complete story can best be got from an obstetrician who sees the cases through. The evidence I have from my own clientèle wants completeness in this respect: that I have to take the story of the patient in most cases, and of the medical attendant in a few, concerning the puerperal illness.

Dr. McDonald (p. 1090 *Edinburgh Medical Journal*, 1873) expresses his opinion to the effect, "That obscure cases of gonorrhœa have more to do with the causation of certain forms of puerperal fever, and with attacks of acute and chronic pelvic inflammation, as also of chronic catarrh of the genital organs, than has hitherto been believed, I think Dr. Noeggerath proves beyond a doubt. But that the *extent* to which this ailment influences the frequency, degree, and persistency of such ailments, as well as the production of sterility, is as marked as Dr. Noeggerath would have us to believe I think is open to question. Nay, I believe that in regard to the *extent* of the influence of the gonorrhœal virus Dr. Noeggerath is mistaken; and the few cases I am able to bring forward, so far

as they go, certainly bear me out in this view. These cases are as follows :

“CASE I.—Mrs. S——, aged twenty-four, was delivered of a female child, after a very easy labour, on the 15th of April, 1869. Previous labours two, and had been quite normal. Both mother and child did well till about the fourth or fifth day, when the mother was seized with severe pain in the abdomen, accompanied with great tenderness on pressure, and a considerable amount of fever. The pain and tenderness, however, disappeared in about a week or ten days under the influence of opiates internally and the application of poultices externally. About the same time as the mother became ill the baby's eyes were noticed to be affected with severe conjunctivitis of a suspiciously specific character. On inquiry I ascertained that the husband of my patient had, during the time she was carrying this child, been affected with discharges of a gonorrhœal character, but that she herself had not suffered in consequence, except that she had some leucorrhœa before her confinement. She had had no pain on micturition, nor any swelling of the parts, so far as she could remember. The child's eyes were treated by cleanliness and the occasional application of nitrate of silver in solution; and gradually, though slowly, got quite better. The mother made a slow recovery, but was able to be out of bed by the end of five weeks.

“About this time, after being at church getting her child baptized, my patient was suddenly seized with excruciating pain in the left side of the pelvis, about the situation of the left ovary, accompanied with a quick pulse and fever. This, on physical examination, gave all the usual signs of a perimetritis originating near the opening of the left Fallopian tube, and spreading forwards and towards the right, so as to involve the anterior half of the pelvis, and fix the uterus in position.

“For this attack she was treated by poultices and opiates, as well as latterly with the bromide and iodide of potassium, and other remedial agents. She made an exceedingly slow recovery, and was more than six months entirely confined to bed. During this period she was seen both by Dr. Moir and the late Sir James Y. Simpson. Since then I have ascertained from her that she suffers more or less severely at each menstruation from pain in the left groin, and that when she menstruates she is usually ill for nearly three weeks at a time, though not very much blood comes away at any one time. She is also rather irregular as to the recurrence of her menstrual periods. Since I attended her in 1869 she has given birth to two healthy children—one in July, 1870, and another on 17th December, 1872. These confinements were both got over all right, except that in December last she had a slight

attack of inflammation immediately after her labour. She is now in tolerably good health.

“CASE II.—The subject of this case, a primipara, was seized with labour pains about three o'clock a.m. on 14th November, 1872. On the 17th symptoms of fever came on. Pulse 110, tongue foul; no milk in the breasts; appetite very indifferent; no vomiting; slight tenderness over uterus, and lochial discharge scanty. On the 19th the pain was a good deal abated, as also the tenderness; uterus still hard; perspirations continuous and severe; pulse still 120, but full; discharge thin and copious; tongue very foul. During all this illness no distinct rigour had occurred, and the temperature had never risen over 103·5. Patient vomited at about 2 a.m. Pain of an apparently rheumatic character, accompanied with redness and inflammation of the fibrous tissues surrounding the joints, present in both hands, in both shoulders, and in both knees, but more especially in the left knee.

“The patient continued much in this condition for several days, when the symptoms slowly abated. The pulse varied from 120 to 114, 96, 108, 96, 84, and 75 in successive days. The temperature never rose over 103·5. On the 20th and for some days subsequently milk appeared in the breasts. There never was any symptom of parametritis or of perimetritis. On the 22nd there was excessively severe diarrhœa, which yielded on the same evening to lead and opium. With this exception, the bowels spontaneously moved freely, but not too freely, throughout the illness. The uterine symptoms disappeared more rapidly than the joint affection. On the tenth or twelfth day a very copious eruption of the nature of pemphigus came out all over the abdomen, and, indeed, generally all over the whole body. The case of the child's eyes was handed over to an ophthalmologist. It proved a very severe case of gonorrhœal conjunctivitis, ending in almost complete destruction, through ulceration, of nearly the whole of the cornea of the left eye, and the formation of a large perforating ulcer in the cornea of the right eye. The left eye promises to be almost useless. There is, however, a wonderful amount of vision still persistent in the right eye.

“Careful enquiry into this distressing case made it manifest that the husband, who was of unsteady habits, suffered more or less from gonorrhœal discharges for several months before the labour took place. As to the number of months it was impossible to gain an absolutely correct statement. On the most close and anxious inquiry I was unable to make out whether the patient was infected just before labour or had previously suffered from latent gonorrhœa. The balance of evidence, however, I consider points to the latter alternative. She was never aware of any unnatural discharge, or of any uncomfortable feeling in her genital passages, previously to

the period of her confinement ; but both she and her attendants were aware that her husband suffered from discharges of some sort. Examination of her parts since her recovery reveals everything perfectly healthy to the feel. No hardness, no uterine displacement, no fixation of this organ, nor adhesions of any sort. Her menstrual periods, painful *before marriage*, are *now* painless. There were slight condylomatous elevations plainly visible around the inlet into the vagina and the anus, such as are referred to by Dr. Noeggerath as occasionally appearing in such cases. I ought to have stated that, during the whole of the convalescence, the discharge was excessively copious, yellow, and very offensive, and that the vagina was regularly washed out with diluted solution of Condyl's fluid once or twice a day. There never appeared any ardor urinae.

"CASE III.—Mrs. B——— was confined on the morning of the 22nd of December, 1872, of a fine healthy male child (her fifth or sixth confinement) after an easy labour of about six hours' duration. Both mother and child at first did well. After five or six days the child's eyes were noticed to become swollen and red, and the eyelids very much enlarged. For this the ordinary treatment for acute specific conjunctivitis was applied by me at once.

"On the seventh day after her labour Mrs. B——— was suddenly seized with great pain across the lower part of the abdomen, more especially towards the left iliac region, accompanied with fever and great heat. Pulse 110. Ordered fomentations and five-grain doses of Dover's powder every four hours. This condition lasted, with diminishing intensity, for four or five days, when the patient got pretty well, made a good recovery, and is now perfectly well. The organs of generation, so far as manipulation single and combined can make out, are now perfectly normal. For upwards of two months after her labour, however, the patient suffered from a yellowish-white discharge, which has since entirely disappeared. The child's eyes got gradually worse, especially the left eye. They were placed under the care of an ophthalmologist, but yet the left eye has been completely lost by ulceration of the cornea, and the right eye all but absolutely ruined.

"This patient was not in the habit of sleeping in the same room or bed with her husband. I have absolute evidence that he suffered from a gonorrhœa in July. For six or eight weeks after this there was no sexual intercourse between him and his wife. During a short residence with his family in the country, in the first fortnight of September, his wife and he occupied the same bed. He must have then thought himself completely cured. There was no appearance of anything wrong about him. There followed, however, on this intercourse a great deal of discharge from Mrs. B———'s vagina, which was mistaken for an ordinary

leucorrhœa, along with some swelling of the genitals and slight pain on making water. There was no further sexual intercourse previous to the birth of the child in December, and no special inconvenience experienced by Mrs. B——, who imagined that the discharge in September was simply leucorrhœa.

“CASE IV.—I was recently summoned hastily into the country to see, in consultation, a young lady who had, as a consequence of an illicit amour, been prematurely delivered of a child at about the fifth or sixth month. The labour was quick. There was, however, considerable hemorrhage before the medical attendant of the family, who lived some miles distant, could arrive. The placenta was removed with some difficulty. Then the hemorrhage ceased. She was delivered on the Saturday afternoon. On the Sunday morning immediately succeeding she felt quite well. In the evening not so well. Fever symptoms came on. Pain over the lower part of the abdomen, and pulse exceedingly rapid. Pain also in the right hypochondrium. Vomiting severe. Monday, much worse; pulse small, thready, and quick; vomiting continuous. Ordered a pill of aloes and myrrh to be administered, and warm applications to the abdomen. The bowels did not, however, move, notwithstanding that a mild purgative was repeated. Great distension of the abdomen. Tuesday, patient was decidedly worse in the morning, and an enema of castor oil was administered, with no effect. She became unconscious in the afternoon, pulse imperceptible, and died about 5.30 p.m. Her mother states that about seven weeks ago her daughter had a rather severe discharge of blood. After this, for some weeks, she observed some yellow discharge on her linen. On one occasion she heard her complain that she had to make water frequently. On my asking my medical friend, who happened to be the medical attendant of both the young lady and the father of the child, he told me that the father of the child had consulted him, and had informed him that about two years ago, he had suffered from a rather severe attack of gonorrhœa, for which he was treated by a distinguished surgeon in this city, and after a time dismissed as cured. But ever since, under the influence of venereal excitement, he stated that the original discharge comes back, along with pain in the urethra. The discharge under such excitement, even when its origin is purely psychical, he said was so profuse as occasionally to necessitate the use of an astringent lotion. He usually employed a tannin lotion.

“*Autopsy* forty-eight hours after death. General peritonitis, but much more severe in the true pelvis, in which was a considerable quantity of a grumous fluid. The whole peritoneal surface of uterus intensely red. The broad ligaments both congested and red,

but no pus between their layers, and no evidence, so far as a hurried section and examination could afford, of enlargement of the lymphatics, either uterine or between the folds of the broad ligaments. The Fallopian tubes both swollen, distended throughout outer half to the width of a crow quill or more, and filled with a dark-coloured fluid. Both ovaries softened into pulpy masses. The lower half of the uterus almost healthy. The upper half involved in intense metritis throughout *its entire thickness*, so that the tissue was reduced to a red, softened, friable, semi-pulpy mass. The gall-bladder filled with a black fluid, about the appearance and consistence of tar. The liver throughout its extent infiltrated with some dark-looking fluid, softened and easily torn. Kidneys congested and soft.

"CASE V.—Mrs. T——— was married in 1864, at the age of twenty-nine. She was safely confined of a male child in September, 1865, making a good recovery. Her husband suffered from a chronic urethral stricture, the result of a gonorrhœa contracted before marriage. She has not become a second time pregnant, and has been more or less annoyed with a rather copious leucorrhœal discharge ever since her confinement. Upwards of two years ago she began to suffer from very severe menorrhagia, and was ultimately laid up with this, combined with pelvic pains, fever, and weakness during December, 1871, and January, 1872. On being called in to attend her during this period I found evidence of the most general and severe sub-acute perimetritis, combined with chronic uterine enlargement. The whole of the arch of the vagina felt as hard as a deal board, and the uterus, much enlarged and tender, was fixed immovably in the centre of this mass of pelvic peritoneal induration. The patient was, nevertheless, able to go about, and was more distressed about the menorrhagia than troubled with the pelvic pains. From this, under tonic and discutient treatment, she gradually got much better, and then the menorrhagia disappeared.*

"CASE VI.—In consequence of an unfortunate accident which befel her husband, Mrs. M——— was the victim of an acute attack of gonorrhœa about three years ago. For this she was treated by me with injections of copaiba, etc., per vaginam, and the administration of copaiba capsules by the mouth. After a

* "Having been asked to see this patient since I read this paper, I find the perimetritis greatly away, and that her general health has been very much better than for some years past. There is fulness and tenderness still felt at the right side of the uterus, and there is a degree of fixation of the fundus to the right side. There are also distinctly to be felt cord-like processes, two or three in number, radiating on each side of the uterus outwards, indicating the remains of the antecedent perimetritis. The uterus is still much enlarged and tender, and the leucorrhœa persists, but there is little or no menorrhagia, and no dysmenorrhœa whatever."

few weeks her recovery was perfect. Since that period she has never experienced the slightest inconvenience in connection with menstruation. Mrs. M——— had previously given birth to one child, who is a fine healthy boy of upwards of six years of age. No doubt since that time she has remained sterile, but before the unfortunate occurrence referred to happened she had already passed that interval between pregnancies which gives the presumption of continued relative sterility. I do not think that we have here a tittle of evidence in favour of the belief that the occurrence of the gonorrhœa had any influence upon the sexual life of Mrs. M———."

Of the six cases mentioned by Dr. McDonald it is worthy of note, again, that three were primiparæ, and amongst these three occurred the only fatal case—that in which the poor girl who was the victim died of puerperal peritonitis, the result of gonorrhœal infection, as made abundantly clear by the history. I have before me a history, as made clear by Dr. McDonald's case, of a primipara who suffered nearly to death, and that it was gonorrhœa is now perfectly evident by the very facts given as Dr. McDonald's proof, and, as I see both mother and child very frequently, the evidence becomes clearer and clearer. The child is now about twelve years of age, and is the only one the mother has ever had, but has been blind from birth, of corneal destruction. The mother suffers from a stiff leg, the result of a suppurated knee-joint, which she had as the result of a puerperal illness after the birth of that child. What her menstrual condition is I do not know, but in this case, from what I know of the husband, I see clear indications that the sufferings of both mother and child were due to his faults. Other histories of a less significant kind occur to me, but as I had not the light which has since been shed upon this subject I did not make myself cognizant of the exact clinical details, and therefore I do not care to quote them; but I have little doubt that they could be placed in the category of Dr. McDonald's discoveries.

The whole ghastly narrative is immensely suggestive, and a more careful research of these cases will show that a very heavy proportion indeed of women who die from puerperal peritonitis in their first labours are the victims of their husband's early indiscretions.

Commenting upon his own cases, Dr. McDonald adds that "we ought, therefore, I think, to be a very great deal more guarded in giving our permission of marriage to young men who have within a short period contracted a gonorrhœa, or who suffer from a gleet discharge. Dr. Noeggerath's, and, I think, my own cases also, prove to a demonstration that if a man marry with the slightest shade of a gleet he exposes his wife to the possible risk of great misery throughout her menstrual life, as well to great risk of death in case she becomes pregnant." With this suggestion I entirely

concur, and I think very great carelessness seems to have been exercised on the part of those who have charge of cases of young men suffering from gonorrhœa. From the enormous number of cases of damaged uterine appendages which come under my care in young married women who have remained sterile after having been a few months married, I am almost disposed to believe that it is unjustifiable for a man who has ever suffered from a gonorrhœa to enter the marriage state at all.

The following tables include all the cases since 1880 in which I have operated for removal of the uterine appendages on account of damage arising from chronic inflammatory disease. In the sixth column is given, as nearly as can be, the leading feature of the lesion:—

No.	Residence.	Medical Attendant.	Age	M or S	Disease.	Date.	R or D
1880.							
1	Leamington	Dr. Tomkins	29	M	Cirrhosis of ovary	Jan. 3	R
2	West Bromwich..	Dr. Sansome	22	M	Chronic ovaritis	Feb. 9	R
3	Northampton ...	Dr. Graiy Hewitt..	36	S	Chronic ovaritis	Feb. 26	R
4	Birmingham ..	Mr. Ross Jordan ..	37	M	Chronic ovaritis	Mar. 18	R
5	Birmingham	L. T.	37	M	Hydrosalpinx	April 3	R
6	Birmingham	Mr. Crompton	33	M	Chronic ovaritis	April 9	R
7	Birmingham	Mr. Clay	23	M	Chronic ovaritis	April 23	R
8	Wolverhampton ..	Dr. Lycett	37	M	Abscess of ovary	June 28	R
9	Hanley	Dr. C. H. Phillips..	37	M	Hydrosalpinx	Aug. 3	R
10	Leamington	Dr. Thursfield.....	31	S	Chronic ovaritis	Aug. 7	R
11	Wednesbury	Dr. Sutton	28	M	Chronic ovaritis	Aug. 10	R
12	Birmingham	L. T.	28	M	Hydrosalpinx	Sept. 29	R
13	Birmingham	Dr. Hoare	32	M	Double pyosalpinx.....	Oct. 5	R
14	Dudley	Dr. Bradley	30	S	Chronic ovaritis	Oct. 6	R
1881.							
15	Liverpool	Dr. Macfie Campbell	21	S	Chronic ovaritis	Jan. 21	R
16	Church Stretton..	Dr. MacClintock ...	37	M	Double pyosalpinx.....	Mar. 6	R
17	Darlaston	Dr. Cameron	40	M	Double hydrosalpinx...	May 21	R
18	Cradley	Dr. Standish	29	M	Double pyosalpinx.....	June 13	R
19	Redditch	Dr. Bosworth	30	M	Double hydrosalpinx...	July 14	R
20	Aston	Dr. Smith	33	M	Double pyosalpinx.....	Aug. 2	R
21	Stourbridge	Dr. Smith	27	M	Double hydrosalpinx...	Aug. 19	R
22	Old Hill	Dr. F. Underhill....	23	M	Right hydrosalpinx and left pyosalpinx	Oct. 3	R
23	Birmingham	Mr. Hallwright	41	M	Double hydrosalpinx ..	Oct. 19	R
24	Dudley	Mr. S. Berry	31	S	Double pyosalpinx.....	Oct. 21	R
25	London	Dr. J. Chambers....	30	M	Double hydrosalpinx...	Oct. 24	R
26	Walsall	L. T.	38	M	Double hydrosalpinx...	Nov. 9	R
27	Warwick	Dr. Watson	33	M	Double hydrosalpinx...	Nov. 14	R
28	Warwick	Mr. Bullock	37	M	Double hydrosalpinx...	Nov. 30	R
29	Walsall	Dr. Hubbard	32	M	Double hydrosalpinx...	Dec. 10	R
30	Birmingham	Mr. J. R. Harnmar..	44	M	Double hydrosalpinx...	Dec. 16	R
31	Wolverhampton..	L. T.	29	S	Chronic ovaritis	Dec. 19	R
1882.							
32	Somerbey	Dr. Jackson	35	M	Chronic ovaritis	Jan. 6	R
33	Birmingham	Dr. Greene	28	M	Right pyosalpinx	Feb. 2	R
34	Birmingham	Mr. J. R. Harnmar..	35	S	Double pyosalpinx.....	Feb. 9	R
35	Birmingham	Dr. Virrace	43	M	Chronic ovaritis	Feb. 18	R
36	London	L. T.	27	M	Double pyosalpinx.....	Feb. 22	R
37	Birmingham	Dr. Holbeche	34	W	Double hydrosalpinx...	Feb. 27	R
38	Birmingham	Dr. Day	28	M	Left pyosalpinx and.. right hydrosalpinx	Mar. 4	R
39	Walsall	Mr. Willmore	46	M	Double hydrosalpinx...	Mar. 7	R
40	Stonehouse	Dr. Eshelby	37	W	Left pyosalpinx and.. right hydrosalpinx	Mar. 10	R
41	Wednesbury	Mr. Garman	49	M	Double pyosalpinx.....	Mar. 13	R
42	Wednesbury	Dr. Partridge	36	S	Chronic ovaritis	Mar. 16	R
43	Birmingham	Dr. Hickinbotham..	38	M	Double hydrosalpinx...	April 2	R
44	Walsall	Dr. Holliday	31	M	Double pyosalpinx.....	April 12	R
45	Birmingham	Dr. C. J. Bracey	38	M	Double pyosalpinx.....	April 21	R
46	Walsall	Mr. Gwinnet Sharp.	28	S	Double pyosalpinx.....	April 27	R

No.	Residence.	Medical Attendant.	Age	M or S	Disease.	Date.	R or D
1882.							
47	Lichfield	Mr. J. Clay	28	?	Double hydrosalpinx...	May 16	R
48	Atherstone	Dr. Mears	30	M	Chronic ovaritis	May 29	R
49	Manchester	Dr. Roberts	32	M	Double pyosalpinx	June 28	R
50	Budleigh	Dr. Evans	28	W	Double pyosalpinx	June 28	R
51	Birmingham	Dr. Quirke	34	M	Double hydrosalpinx	July 13	R
52	Stockport	Dr. Dahms	26	S	Chronic ovaritis	July 15	D
53	Stonehouse	Dr. Eshelby	37	S	Chronic ovaritis	July 27	R
54	Redditch	Dr. Mathews	25	M	Double hydrosalpinx	Aug. 17	R
55	Stoke on-Trent	Mr. Spanton	33	M	Chronic ovaritis	Aug. 18	R
56	Redditch	Dr. Mathews	20	M	Double hydrosalpinx	Sept. 5	R
57	Richmond	Mr. W. D. Spanton	40	W	Chronic ovaritis and left hydrosalpinx	Sept. 5	D
58	Coventry	Dr. Fenton	39	M	Double hydrosalpinx ..	Sept. 8	R
59	Aston	L. T.	33	M	Double hydrosalpinx ..	Sept. 14	R
60	Sandown	Dr. Green	24	S	Chronic ovaritis	Sept. 19	R
61	Barnstable	Dr. Budd	36	M	Double pyosalpinx	Oct. 10	R
62	Wanganui, N.Z.	Dr. Conelly	31	M	Double hydrosalpinx ..	Oct. 12	R
63	Walsall	Dr. Oliver	36	M	Double hydrosalpinx ..	Oct. 27	R
64	Wellington	Dr. Taylor	27	S	Double pyosalpinx	Nov. 8	R
65	Oxford	Dr. Darbishire	36	M	Double pyosalpinx	Nov. 11	R
66	Birmingham	Dr. Taylor	32	S	Double pyosalpinx	Dec. 1	R
67	Llanynynech	Dr. Manning	43	M	Double pyosalpinx	Dec. 6	R
1883.							
68	Cheltenham	Dr. Gooding	25	M	Double hydrosalpinx ..	Jan. 3	R
69	London	Dr. R. Smith	32	S	Double pyosalpinx	Jan. 13	R
70	Southampton	Dr. Seaton	36	W	Chronic ovaritis	Jan. 23	R
71	Hull	Dr. Hardey	24	S	Chronic ovaritis	Jan. 23	R
72	Birmingham	Dr. Clibborn	36	M	Disease of Fallopian tubes	Jan. 31	R
73	Hinckley	Dr. Bradshaw Smith	31	S	Chronic ovaritis	Feb. 16	R
74	Ludlow	Dr. Brookes	43	M	Double hydrosalpinx ..	Feb. 16	R
75	Hednesford	L. T.	29	M	Double hydrosalpinx ..	Feb. 25	R
76	Wolverhampton	Dr. Lycett	32	M	Double pyosalpinx	Feb. 27	R
77	Walsall	Dr. Hickinbotham	32	M	Double hydrosalpinx ..	Feb. 28	R
78	Stratford-on-Avon ..	Mr. J. J. Nason	34	S	Chronic ovaritis	Mar. 1	R
79	Birmingham	L. T.	21	M	Pyosalpinx	April 3	R
80	Walsall	Dr. Golding	38	M	Double hydrosalpinx ..	April 12	R
81	Birmingham	Dr. Brown	40	M	Double pyosalpinx	April 16	R
82	Bridgnorth	L. T.	35	S	Chronic ovaritis	April 17	R
83	Wolverhampton	Dr. Scott	25	M	Hydrosalpinx	April 19	R
84	Birmingham	L. T.	27	M	Pyosalpinx	April 27	R
85	Birmingham	Dr. Hickinbotham	20	M	Chronic ovaritis	May 1	R
86	Walsall	Dr. Shore	27	M	Double hydrosalpinx ..	May 23	R
87	Gloucester	Dr. Washbourn	26	M	Double pyosalpinx	May 25	R
88	Coventry	Dr. Lynes	31	M	Double pyosalpinx	June 1	R
89	Birmingham	Dr. Annie Clark	27	M	Chronic ovaritis	June 22	R
90	Market Rasen	Dr. Taplin	30	M	Double hydrosalpinx ..	June 27	R
91	Nottingham	Dr. Jones	32	M	Double hydrosalpinx ..	July 10	R
92	Wednesbury	Dr. Cameron	34	M	Double pyosalpinx	July 12	R
93	Birmingham	Mr. J. R. Harmar	41	S	Double hydrosalpinx ..	July 12	R
94	Birmingham	Dr. Bull	23	M	Double pyosalpinx	July 27	R
95	Leicester	Dr. Hatchett	28	M	Double pyosalpinx	July 27	R
96	Frome	Dr. Cornwall	27	S	Chronic ovaritis	Aug. 7	R
97	Henley-in-Arden	Dr. Arthur	20	S	Chronic ovaritis	Aug. 28	R
98	Leicester	Dr. W. Thomas	38	S	Double pyosalpinx	Aug. 27	R
99	Northampton	Dr. Elder	31	M	Double hydrosalpinx ..	Sept. 7	R
100	Cheltenham	Dr. Carlew	26	M	Chronic ovaritis	Sept. 11	R
101	Birmingham	L. T.	29	M	Double pyosalpinx	Sept. 15	R
102	Birmingham	Mr. Hunt	27	S	Chronic ovaritis	Sept. 17	R
103	Belfast	Dr. Horne	32	M	Double hydrosalpinx ..	Sept. 17	D
104	Stafford	Mr. Weston	26	M	Double hydrosalpinx ..	Oct. 20	R
105	Birmingham	L. T.	34	M	Double pyosalpinx	Oct. 24	R
106	Birmingham	L. T.	39	M	Chronic ovaritis	Nov. 16	R
107	Lichfield	Dr. Welshman	29	M	Double hydrosalpinx ..	Nov. 21	R
108	Cardiff	L. T.	24	M	Double hydrosalpinx ..	Nov. 28	R
109	Hull	Dr. Hardey	37	S	Chronic ovaritis	Nov. 29	R
1884.							
110	Coventry	L. T.	24	M	Chronic ovaritis	Jan. 3	R
111	Oldbury	Dr. Cunningham	20	S	Chronic ovaritis	Jan. 7	R
112	Leicester	Dr. Pope	28	M	Chronic ovaritis	Jan. 15	R
113	Hexam	Dr. Farmer	30	M	Abscess of ovaries	Jan. 18	R
114	Stafford	Dr. Reid	23	S	Chronic ovaritis	Jan. 18	R

83. Op.—Left tube removed. This patient had been operated upon on the 15th of September, 1880, for cystoma of the right ovary.

No.	Residence.	Medical Attendant.	Age	M or S	Disease	Date.	R or D
1884.							
115	Birmingham	Dr. Pull	29	M	Chronic ovaritis	Feb. 7	R
116	Oldbury	Dr. Cunningham	29	M	Chronic ovaritis	Feb. 11	R
117	Aldershot	Dr. Carter	37	M	Chronic ovaritis	Mar. 5	R
118	Newtown (Mon.).	L. T.	35	M	Chronic ovaritis	Mar. 11	R
119	Stonnal	Dr. Evans	25	M	Double pyosalpinx	Mar. 12	R
120	Birmingham	Mr. Palmer	26	M	Double pyosalpinx	Mar. 13	R
121	Birmingham	Dr. Ward	29	M	Double pyosalpinx	Mar. 21	R
122	London	Dr. Godson	31	S	Chronic ovaritis	Mar. 30	R
123	Manchester	Dr. Phillips	30	S	Chronic ovaritis	April 1	R
124	Birmingham	Mr. Freer	27	M	Double pyosalpinx	April 1	R
125	Birmingham	L. T.	37	M	Double hydrosalpinx	April 2	R
126	Chester	Dr. Roberts	28	M	Chronic ovaritis	April 9	R
127	Birmingham	Dr. Williams	43	M	Hydrosalpinx	April 18	R
128	Birmingham	Dr. Taplin	24	M	Double pyosalpinx	April 24	R
129	Birmingham	Mr. Newton	30	S	Chronic ovaritis	April 26	R
130	Birmingham	L. T.	31	M	Double hydrosalpinx	May 1	R
131	Birmingham	L. T.	28	M	Chronic ovaritis	May 5	R
132	Shrewsbury	Dr. Bratten	34	M	Double hydrosalpinx	May 27	R
133	Birmingham	L. T.	29	S	Chronic ovaritis	June 3	R
134	Derby	Mr. Holmes	35	M	Double hydrosalpinx	June 7	R
135	Birmingham	Mr. Leech	34	W	Double hydrosalpinx	June 7	R
136	Birmingham	Dr. Cunningham	23	M	Double hydrosalpinx	June 7	R
137	Stone	Dr. Gibson	27	M	Double hydrosalpinx	June 7	R
138	Birmingham	Dr. Hadley	26	M	Double hydrosalpinx	June 9	R
139	Ansonia, U.S.A.	Dr. Blodget	23	M	Double hydrosalpinx	June 14	R
140	Birmingham	Dr. Taylor	49	M	Double hydrosalpinx	June 19	R
141	Birmingham	Dr. Fairley	21	S	Chronic ovaritis	June 24	R
142	Birmingham	Dr. Taylor	28	M	Double pyosalpinx	June 25	R
143	Stourbridge	Dr. Hammond Smith	42	S	Double hamatosalpinx	July 21	D
144	Birmingham	Mr. Weston	26	M	Double pyosalpinx	July 25	R
145	Birmingham	Mr. Clay	31	M	Double hydrosalpinx	July 29	R
146	Tipton	Dr. Underhill	30	S	Chronic ovaritis	Aug. 1	R
147	Albany, N.Y.	Dr. Vander Veer	33	S	Chronic ovaritis	Sept. 10	R
148	New York	Dr. Palk	—	—	Double pyosalpinx	Sept. 20	R
149	New York	Dr. Lusk	—	—	Chronic ovaritis	Sept. 20	R
150	Bareilly, India.	Dr. Swain	40	M	Double hydrosalpinx	Oct. 3	R
151	Birmingham	Dr. Thomas	23	M	Double hamatosalpinx	Oct. 6	R
152	Dorchester	Dr. Smith	43	M	Abscess of ovaries	Oct. 6	R
153	Wellington	Dr. Anderson	36	M	Double hamatosalpinx	Oct. 20	R
154	Birmingham	Dr. Crosskey	21	S	Chronic ovaritis	Oct. 29	R
155	Birmingham	L. T.	27	M	Double hydrosalpinx	Nov. 4	R
156	Cradley	Dr. De Deme	27	M	Double hydrosalpinx	Nov. 24	R
157	Maldstone	Dr. Wilks	20	S	Chronic ovaritis	Nov. 29	R
158	Birmingham	Dr. Taylor	20	S	Double pyosalpinx	Dec. 8	R
159	Birmingham	Dr. Nicholls	29	M	Double hydrosalpinx	Dec. 17	R
1885.							
160	Birmingham	Dr. Taylor	31	W	Double pyosalpinx	Jan. 7	R
161	Birmingham	L. T.	31	S	Chronic ovaritis	Jan. 7	R
162	Birmingham	Dr. Wilson	37	M	Double pyosalpinx	Jan. 16	R
163	Birmingham	Dr. Gilroy	25	M	Double hydrosalpinx	Jan. 23	R
164	Cheltenham	Dr. Cardew	33	S	Hydrosalpinx	Jan. 23	R
165	Birmingham	Dr. Hadley	34	M	Double pyosalpinx	Jan. 24	R
166	Birmingham	Dr. Malins	20	S	Chronic ovaritis	Jan. 26	R
167	Birmingham	Dr. Madden	29	M	Double pyosalpinx	Feb. 2	R
168	Birmingham	Dr. Taylor	28	S	Double pyosalpinx	Feb. 12	R
169	Birmingham	Dr. Taylor	27	M	Chronic ovaritis	Feb. 16	R
170	Birmingham	Dr. Holmes	39	M	Double pyosalpinx	Feb. 17	R
171	Birmingham	L. T.	24	M	Double pyosalpinx	Feb. 17	R
172	Birmingham	L. T.	23	S	Chronic ovaritis	Feb. 24	R
173	Malvern	Dr. Pike	37	M	Double pyosalpinx	Feb. 25	R
174	Birmingham	Dr. Hoskins	30	S	Double pyosalpinx	Mar. 11	R
175	Birmingham	Dr. Richards	26	M	Chronic ovaritis	Mar. 27	R
176	Birmingham	Dr. Taylor	32	M	Double pyosalpinx	April 10	R
177	Birmingham	Dr. Taylor	29	M	Double pyosalpinx	April 10	R
178	Birmingham	Dr. Pitt	29	M	Double hydrosalpinx	April 15	R
179	Kidderminster	Dr. Measures	24	M	Double pyosalpinx	April 15	R
180	Birmingham	Dr. Nicholls	22	S	Double pyosalpinx	April 16	R

115. Op.—Left tube removed.

128. Op.—Left appendages removed.

165. Op.—Right tube removed (left tube had been removed by another surgeon at previous operation).

167. Op.—Right appendages removed (left appendages had been removed at previous operation).

No.	Residence.	Medical Attendant.	Age	M or S	Disease.	Date.	R or D
181	Ashby-de-la-Zo'ch	Dr. Williams	23	M	Abscess of ovary	1885, April 24	R
182	Grantham	Dr. Shipman	35	S	Chronic ovaritis	April 25	R
183	New York	Dr. Polk	25	M	Chronic ovaritis	April 29	R
184	Birmingham	L. T.	25	S	Chronic ovaritis	May 4	R
185	Wolverhampton	Dr. Millett	32	M	Chronic ovaritis	May 12	R
186	Birmingham	Dr. Harvey	21	M	Double pyosalpinx	May 12	R
187	Shrewsbury	Dr. Storey	18	M	Double pyosalpinx	May 23	R
188	Birmingham	Mr. Clay	26	M	Double pyosalpinx	May 26	R
189	Redditch	Dr. Page	39	M	Double hydrosalpinx	June 4	R
190	Redditch	Dr. Gibbs Blake	36	M	Double pyosalpinx	June 7	R
191	Redditch	Mr. Clay	21	S	Double pyosalpinx	June 12	R
192	Walton	Dr. Billfield	32	M	Chronic ovaritis	June 15	R
193	Newport (Salop)	Dr. Brookes	37	S	Chronic ovaritis	June 16	R
194	Birmingham	Dr. Madden	21	S	Double pyosalpinx	June 22	D
195	New York	Dr. Smith	37	M	Right hydrosalpinx and left pyosalpinx	June 23	R
196	Cavan	Dr. Barnardo	34	M	Double hydrosalpinx	June 26	R
197	Nottingham	Dr. Bolton	26	M	Double hydrosalpinx	June 27	R
198	Birmingham	Dr. Drury	32	M	Double pyosalpinx	July 7	R
199	Birmingham	Mr. Hallwright	29	M	Double pyosalpinx	July 10	R
200	Birmingham	L. T.	28	M	Double pyosalpinx	July 13	R
201	Birmingham	Dr. Mills	27	M	Double pyosalpinx	July 17	R
202	Birmingham	L. T.	27	M	Double pyosalpinx	July 17	R
203	Smethwick	Dr. Jackson	44	M	Double hydrosalpinx	July 17	R
204	Birmingham	Dr. Phillips	34	M	Abscess of ovary	July 20	R
205	London	Dr. Dunbar	30	S	Chronic ovaritis	July 20	R
206	Rugby	Dr. Duke	46	M	Double pyosalpinx	July 21	R
207	Birmingham	Dr. Taylor	18	S	Double pyosalpinx	Aug. 5	R
208	Birmingham	L. T.	37	M	Pyosalpinx	Aug. 15	R
209	New Zealand	Dr. Closs	33	M	Right hæmatosalpinx and left pyosalpinx	Aug. 22	R
210	Hanley	Dr. Phillips	27	M	Left pyosalpinx and right hydrosalpinx	Aug. 26	R
211	Birmingham	Mr. Clay	25	M	Double hydrosalpinx	Aug. 29	R
212	Birmingham	Dr. Hawkes	31	M	Double pyosalpinx	Aug. 29	R
213	Belfast	Dr. Wood	31	M	Right hæmatosalpinx and left hydrosalpinx	Sept. 3	R
214	New York	Dr. Drigen	30	M	Double hydrosalpinx	Sept. 9	R
215	Birmingham	Dr. Benison	35	M	Chronic ovaritis	Sept. 10	R
216	Birmingham	L. T.	39	M	Double hydrosalpinx	Sept. 10	R
217	Rugby	Dr. Simpson	36	M	Double hydrosalpinx	Sept. 12	R
218	West Bromwich	Mr. Evans	29	M	Double hydrosalpinx	Sept. 26	R
219	Birmingham	Mr. Hartley	35	M	Double hæmatosalpinx	Sept. 28	R
220	Ireland	Dr. Moorhead	30	S	Chronic ovaritis	Sept. 28	R
221	Kidderminster	Dr. Spofforth	34	M	Chronic ovaritis	Oct. 8	R
222	Bath	Dr. Cole	36	S	Chronic ovaritis	Oct. 8	R
223	Darlington	Dr. Lawrence	40	M	Double hydrosalpinx	Oct. 8	R
224	Stanford	Dr. Newman	40	M	Chronic ovaritis	Oct. 15	R
225	Warwick	Dr. Lawson Heale	39	M	Double hydrosalpinx	Oct. 17	R
226	Birmingham	Dr. Creswell	25	M	Double pyosalpinx	Oct. 20	R
227	Birmingham	L. T.	44	M	Double hydrosalpinx	Oct. 20	R
228	Wolverhampton	Dr. Millett	31	M	Double hydrosalpinx	Oct. 31	R
229	Hanley	Dr. Spanton	25	S	Double hydrosalpinx	Nov. 5	R
230	Birmingham	Dr. Bull	20	S	Abscess of right ovary	Dec. 4	R
231	Monmouth	Dr. Woollett	33	M	Chronic ovaritis	Dec. 16	R
232	Edinburgh	Dr. Halliday Croom	28	M	Chronic ovaritis	Dec. 20	R
233	Birmingham	Mr. Hallwright	31	M	Double hydrosalpinx	Dec. 21	R
234	Nottingham	Dr. Howitt	41	M	Double hydrosalpinx	1886, Jan. 2	R
235	Birmingham	Dr. Hopkins	40	M	Double pyosalpinx	Jan. 12	R
236	Birmingham	Dr. Taylor	25	M	Hydrosalpinx	Jan. 19	R
237	Bristol	Dr. Harrison	31	S	Chronic ovaritis	Jan. 20	R
238	Birmingham	L. T.	31	S	Chronic ovaritis	Jan. 23	R
239	Cleckheaton	Dr. Sykes	44	M	Double pyosalpinx	Jan. 24	R
240	Tipton	Dr. Price	44	M	Double pyosalpinx	Jan. 25	R
241	London	Dr. Pridham	25	S	Chronic ovaritis	Feb. 1	R
242	Birmingham	Dr. Moyles	41	M	Double hydrosalpinx	Feb. 26	R
243	Birmingham	L. T.	28	M	Double hydrosalpinx	Feb. 27	R
244	Stoke-upon-Trent	L. T.	36	M	Double pyosalpinx	Mar. 3	R
245	Dorchester	Dr. Kendal	26	S	Chronic ovaritis	Mar. 16	R
246	New York	Dr. Keyes	26	M	Double hydrosalpinx	Mar. 18	R
247	Holbech	Dr. Harper	31	M	Chronic ovaritis	April 2	R

182. Op.—Right appendages removed.

205. Op.—Right ovary removed.

No.	Residence.	Medical Attendant.	Age	M or S	Disease.	Date	R or D
1886							
248	Nice	Dr. Balestre	42	M	Abscesses of ovaries	April 4	R
249	Birmingham	Mr. Hawkins	25	M	Double hydrosalpinx	April 10	R
250	Birmingham	Dr. Taylor	27	M	Chronic ovariitis	April 13	R
251	Birmingham	Dr. Notley	29	M	Double pyosalpinx	April 15	R
252	Blackpool	Dr. Seofield	30	M	Double hydrosalpinx	April 17	D
253	Birmingham	L. T.	29	M	Double pyosalpinx	April 20	R
254	Birmingham	Dr. Notley	35	M	Double hydrosalpinx	April 20	R
255	London	L. T.	31	M	Abscess of right ovary	April 20	R
256	Calcutta	Dr. Harvey	37	M	Abscesses of ovaries	April 30	R
257	Connecticut	Dr. Parsons	21	M	Chronic ovariitis	May 7	R
258	Birmingham	Mr. Hallwright	33	M	Acute double pyosalpinx	May 8	R
259	Birmingham	Dr. Hogg	39	M	Chronic ovariitis	May 13	R
260	Middlewick	Dr. Kerans	37	M	Double hydrosalpinx	May 24	R
261	Birmingham	L. T.	38	W	Double pyosalpinx	May 24	R
262	Hexam	Dr. Stainethorpe	38	M	Double hydrosalpinx	June 1	R
263	Ashby-de-la-Zo'ch	Dr. Williams	36	M	Double hydrosalpinx	June 2	R
264	Willenhall	Dr. Hartill	40	M	Double pyosalpinx	June 7	R
265	Birmingham	Dr. Taylor	25	M	Left hydrosalpinx	June 19	R
266	Birmingham	Dr. Nelson	34	M	Double pyosalpinx	June 21	R
267	India	Dr. Newman	27	M	Double hydrosalpinx	June 22	R
268	Birmingham	Dr. Taylor	46	M	Double hæmatosalpinx	June 26	R
269	Liverpool	Dr. Okell	26	M	Chronic ovariitis	July 9	R
270	Daventry	Dr. Foster	23	S	Chronic ovariitis	July 10	R
271	Malvern	Dr. Graily Hewitt	33	S	Chronic ovariitis	July 17	R
272	Hull	Dr. Lydiard	29	S	Chronic ovariitis	July 24	R
273	Stone	Dr. Gibson	36	M	Chronic ovariitis	July 24	R
274	Birmingham	Mr. Bracey	32	S	Chronic ovariitis	July 27	R
275	Derby	Dr. Rice	20	S	Double pyosalpinx	Aug. 3	R
276	Birmingham	Dr. Bridges	35	S	Double hydrosalpinx	Aug. 17	R
277	Festiniog	Dr. Roberts	35	M	Double hydrosalpinx	Aug. 17	R
278	Birmingham	L. T.	23	M	Double pyosalpinx	Aug. 17	R
279	Festiniog	Dr. Roberts	32	M	Double hydrosalpinx	Aug. 18	R
280	Birmingham	Dr. Annie Clark	40	M	Double pyosalpinx	Aug. 20	R
281	Birmingham	Dr. Annie Clark	35	M	Double hæmatosalpinx	Aug. 21	R
282	Bilston	L. T.	38	M	Double pyosalpinx	Aug. 23	R
283	Birmingham	Dr. Ward	21	S	Chronic ovariitis	Aug. 27	R
284	Birmingham	Dr. Taylor	18	S	Double pyosalpinx	Sept. 8	R
285	Birmingham	L. T.	27	M	Double pyosalpinx	Sept. 10	R
286	Stourport	Dr. Moore	33	M	Double pyosalpinx	Sept. 10	R
287	Birmingham	Dr. Hopkins	43	M	Double pyosalpinx	Sept. 11	R
288	Redditch	Dr. Pearce	29	M	Chronic ovariitis	Sept. 13	R
289	Redditch	Dr. Nunn	27	M	Double hydrosalpinx	Sept. 14	R
290	Birmingham	Dr. Skinner	35	M	Double pyosalpinx	Sept. 30	R
291	Exeter	Dr. Gooding	30	S	Chronic ovariitis	Oct. 11	R
292	Birmingham	Dr. Lawson	32	M	Hydrosalpinx	Oct. 16	R
293	Birmingham	Dr. Annie Clark	32	S	Chronic ovariitis	Oct. 18	R
294	Birmingham	Mr. Hues	29	S	Chronic ovariitis	Oct. 18	R
295	Coventry	Dr. Davidson	35	M	Double hydrosalpinx	Oct. 22	R
296	Margate	Dr. White	34	M	Double hydrosalpinx	Oct. 28	R
297	York	Mr. Shann	32	M	Hydrosalpinx	Nov. 3	R
298	Tipton	Dr. Price	27	M	Double pyosalpinx	Nov. 5	R
299	Birmingham	Mr. Barwise	27	M	Double pyosalpinx	Nov. 5	R
300	Birmingham	Dr. Edis	23	M	Double hydrosalpinx	Nov. 6	R
301	Leicester	Dr. Johnston	30	M	Double pyosalpinx	Nov. 11	R
302	Shrewsbury	Dr. Withers	24	S	Chronic ovariitis	Nov. 15	R
303	Birmingham	Dr. North	29	M	Double pyosalpinx	Nov. 19	R
304	Kidderminster	Dr. Jotham	30	S	Double hydrosalpinx	Nov. 19	R
305	Lichfield	Dr. Morgan	26	M	Hæmatosalpinx	Nov. 24	R
306	Stafford	Mr. Weston	29	S	Double pyosalpinx	Nov. 20	R
307	Birmingham	Mr. Hues	20	S	Double pyosalpinx	Nov. 25	R
308	Ezham	Dr. Drew	33	M	Double pyosalpinx	Nov. 28	R
309	Birmingham	Dr. Nicholls	33	M	Double pyosalpinx	Dec. 3	R
310	Birmingham	Dr. Madden	34	M	Chronic ovariitis	Dec. 6	R
311	Llandudno	Dr. Davis	36	M	Double pyosalpinx	Dec. 6	R
312	Bloxwich	Dr. Hann	33	M	Double pyosalpinx	Dec. 11	R
313	Alvechurch	Dr. Parkes	32	M	Chronic ovariitis	Dec. 11	R

256. The right ovary had not been removed at a previous operation, and an abscess formed in it.

293. Op.—Right appendages removed (left set of appendages had been removed for a large cystoma on the 3rd of October, 1885).

298. Op.—Right appendages removed (left set of appendages had been removed for a large cystoma on the 3rd of October, 1885).

306. Op.—Right tube removed.

No.	Residence.	Medical Attendant.	Age	M or S	Disease	Date.	R or D
						1886.	
314	Birmingham	Dr. Fairley	29	M	Left pyosalpinx	Dec. 12	R
315	Birmingham	Dr. Glysson	29	S	Chronic ovaritis	Dec. 15	R
						1887.	
316	Birmingham	Dr. Bosworth	25	S	Chronic ovaritis	Jan. 11	R
317	Walsall	Dr. Oliver	23	M	Chronic ovaritis	Jan. 17	R
318	Birmingham	Dr. Thomas	28	S	Chronic ovaritis	Jan. 21	R
319	Birmingham	L. T.	35	M	Double hydrosalpinx	Jan. 22	R
320	Birmingham	Dr. Waterson	38	M	Double pyosalpinx	Jan. 22	R
321	Wolverhampton	Dr. Hardey	39	S	Double pyosalpinx	Jan. 24	R
322	Bilston	Dr. Wells	42	M	Double hydrosalpinx	Jan. 24	R
323	Birmingham	Mr. Bartleet	26	M	Chronic ovaritis	Feb. 3	R
324	Birmingham	Dr. Bottle	21	M	Chronic ovaritis	Feb. 4	R
325	Birmingham	Mr. Clay	28	S	Chronic ovaritis	Feb. 5	R
326	Alfreton	Dr. Pegler	28	M	Chronic ovaritis	Feb. 5	R
327	Birmingham	L. T.	32	M	Right hydrosalpinx	Feb. 18	R
328	Birmingham	Mr. Alldridge	21	M	Double hydrosalpinx	Feb. 25	R
329	Preston	Dr. Byrue	29	M	Double hydrosalpinx	Mar. 2	R
330	Birmingham	L. T.	42	M	Chronic ovaritis	Mar. 4	R
331	Birmingham	L. T.	20	M	Double hydrosalpinx	Mar. 14	R
332	Alfreton	Dr. Pegler	24	M	Double hydrosalpinx	Mar. 14	R
333	Coventry	Dr. Johnston	25	M	Pyosalpinx	Mar. 16	R
334	Birmingham	Dr. Wilson	23	M	Double pyosalpinx	Mar. 24	R
335	West'n-sup'r-Mare	Dr. Griffiths	34	M	Right pyosalpinx and ..	April 14	R
					left hydrosalpinx		
336	Birmingham	L. T.	29	M	Double pyosalpinx	April 15	R
337	Stonehouse	Dr. Watters	23	S	Double pyosalpinx	April 18	R
338	Birmingham	Dr. Simon	39	M	Double pyosalpinx	April 20	R
339	Birmingham	Dr. Nicholls	43	M	Double pyosalpinx	April 22	R
340	Stafford	L. T.	23	M	Right hydrosalpinx and ..	May 3	D
					left pyosalpinx		
341	Manchester	Dr. Rowe	32	M	Double pyosalpinx	May 8	D
342	Birmingham	Dr. Summer	43	M	Double pyosalpinx	May 11	R
343	Atherstone	Dr. Mears	29	W	Chronic ovaritis	May 16	R
344	Birmingham	Dr. Madden	22	S	Chronic ovaritis	May 17	R
345	Halifax	Dr. Ainley	28	S	Chronic ovaritis	May 21	R
346	Slrewsbury	Dr. Cox	38	M	Double pyosalpinx	June 2	R
347	Devon	Dr. Goodwin	29	S	Chronic ovaritis	June 4	R
348	Wimborne	Dr. Parkinson	19	S	Double hydrosalpinx	June 9	R
349	Walsall	L. T.	39	M	Double hydrosalpinx	June 10	R
350	London	Dr. Grigg	33	M	Double pyosalpinx	June 17	R
351	Birmingham	Dr. Middleton	27	M	Chronic ovaritis	June 24	R
352	Birmingham	Dr. Drummond	49	W	Double pyosalpinx	June 28	R
353	Nuneaton	Mr. Nason	28	M	Double pyosalpinx	July 2	R
354	Bridgnorth	Mr. Rhodes	36	M	Double pyosalpinx	July 29	R
355	Salisbury	Dr. Stratton	39	M	Double pyosalpinx	July 31	R
356	Atherstone	Mr. Mears	36	S	Chronic ovaritis	Aug. 26	R
357	Birmingham	L. T.	40	M	Right pyosalpinx and ..	Sept. 1	R
					left hydrosalpinx		
358	Hanley	L. T.	33	M	Double pyosalpinx	Sept. 1	R
359	Birmingham	Dr. Bottle	36	M	Double pyosalpinx	Sept. 7	R
360	Birmingham	Mr. Newton	37	M	Right pyosalpinx and ..	Sept. 7	R
					left hydrosalpinx		
361	Indianapolis	Dr. Runnels	37	M	Chronic ovaritis	Sept. 7	R
362	Gloucester	Dr. Bower	—	M	Double pyosalpinx	Sept. 17	R
363	Lugano	Dr. Solari	32	M	Double pyosalpinx	Sept. 24	R
364	Dudley	Dr. Bellingham	34	M	Double pyosalpinx	Sept. 30	R
365	Birmingham	Dr. Annie Clark	30	M	Double pyosalpinx	Oct. 1	R
366	Stourbridge	Mr. Freer	43	S	Double hæmatosalpinx ..	Oct. 3	R
367	Cork	Dr. Pearson	29	M	Double hydrosalpinx	Oct. 10	R
368	Rugeley	Mr. Freer	29	S	Chronic ovaritis	Oct. 24	R
369	Worcester	Dr. Evans	25	M	Chronic ovaritis	Oct. 26	R
370	Bloxwich	Mr. Hubbard	28	M	Double pyosalpinx	Nov. 2	D
371	Birmingham	L. T.	33	M	Double pyosalpinx	Nov. 3	R
372	Dudley	Dr. Bradley	25	M	Double pyosalpinx	Nov. 8	R
373	Gloucester	Dr. Batten	27	S	Double pyosalpinx	Nov. 11	R

315. Op.—Left tube removed.

328. Op.—Left appendages removed (parovarian cyst had been removed on the 17th of February, 1881.)

355. An ovarian tumour had been removed for hæmorrhage on the 7th April, 1884.

359. A dermoid tumour of left ovary had previously been removed on the 25th September, 1885, the tube apparently having been left intact in both of these cases.

No.	Residence.	Medical Attendant.	Age	M or S	Disease.	Date.	R or D
1887.							
374	Birmingham	Dr. Annie Clark	19	S	Left pyosalpinx and .. right hydrosalpinx	Nov. 17	R
375	Birmingham	Dr. Whitcombe	35	M	Double pyosalpinx	Dec. 1	R
376	Stourbridge	Dr. Pearson	26	M	Acute double pyosalpinx	Dec. 6	R
377	Birmingham	L. T.	36	M	Chronic ovaritis	Dec. 12	R
378	Wolverhampton	Dr. Watts	29	M	Chronic ovaritis	Dec. 14	R
379	Birmingham	Dr. Taphin	32	M	Chronic ovaritis	Dec. 19	D
1888							
380	Newport	Dr. Thomas	36	M	Chronic ovaritis	Jan. 3	R
381	Sidcup	Dr. Poole	27	M	Chronic ovaritis	Jan. 6	R
382	Halifax	Mr. Porritt	28	M	Chronic ovaritis	Jan. 7	R
383	Oakham	Dr. Norman	31	M	Chronic ovaritis	Jan. 7	R
384	Birmingham	Dr. Welsh	26	M	Right pyosalpinx and .. left hydrosalpinx	Jan. 7	R
385	Persia	Dr. Cochran	32	S	Chronic ovaritis	Jan. 16	R
386	Leicester	Dr. Olifant	27	M	Double pyosalpinx	Jan. 16	R
387	Nottingham	Dr. Rice	23	S	Chronic ovaritis	Jan. 17	R
388	Wellington	Dr. Calwell	19	M	Chronic ovaritis	Jan. 23	R
389	Sedgeley	Mr. Baker	37	M	Double pyosalpinx	Jan. 31	R
390	Market Bosworth	Dr. Clifton	33	M	Chronic ovaritis	Feb. 1	R
391	Preston	L. T.	42	S	Chronic ovaritis	Feb. 8	R
392	Conway	Dr. Hughes	28	M	Double pyosalpinx	Mar. 6	R
393	Birmingham	L. T.	26	M	Double pyosalpinx	Mar. 12	R
394	London	Dr. Knott	27	M	Chronic ovaritis	Mar. 14	R
395	Gloucester	Dr. Cole	23	M	Double hydrosalpinx	Mar. 15	R
396	Brimmaer	Dr. Brown	34	S	Chronic ovaritis	Mar. 17	R
397	Stourbridge	L. T.	40	M	Double pyosalpinx	Mar. 17	R
398	Leamington	L. T.	37	M	Double hydrosalpinx	Mar. 22	R
399	Kilsby	L. T.	37	M	Double hydrosalpinx	Mar. 28	R
400	India	Dr. Perry	29	S	Chronic ovaritis	April 6	R
401	Worcester	L. T.	29	M	Chronic ovaritis	April 6	R
402	Birmingham	Dr. Whitcombe	30	M	Double pyosalpinx	April 12	R
403	Birmingham	L. T.	26	S	Chronic ovaritis	April 25	R
404	Lutterworth	Dr. Cartwright	25	M	Double pyosalpinx	April 26	R
405	Bristol	Dr. Perry	28	M	Double pyosalpinx	May 8	R
406	Birmingham	Dr. Bull	32	M	Double pyosalpinx	May 8	R
407	Lincoln	Dr. Simpson	27	S	Double pyosalpinx	May 23	R
408	Gloucester	Dr. Cole	24	M	Double pyosalpinx	May 30	R
409	Cardiff	Dr. Davis	39	M	Double pyosalpinx	May 31	R
410	San Francisco	Dr. Cushing	48	M	Double pyosalpinx	June 2	R
411	Hanley	L. T.	35	M	Chronic ovaritis	June 5	R
412	Birmingham	Mr. Whitcombe	29	M	Double pyosalpinx	June 6	R
413	New York	Dr. Tuttle	32	M	Double pyosalpinx	June 21	R
414	West Bromwich	Dr. Browne	33	M	Right pyosalpinx	June 27	R
415	Birmingham	Dr. Frost	22	S	Abscess of ovary and adherent appendages on left side	June 27	R
416	London	Dr. H. Smith	33	S	Chronic ovaritis	July 2	R
417	Huddersfield	Dr. Clarke	41	M	Chronic ovaritis	July 4	R
418	Torquay	Dr. Hope	47	M	Double hydrosalpinx	July 9	R
419	Birmingham	Mr. Hallwright	41	M	Double hydrosalpinx	July 10	R
420	New York	Dr. Sampson	27	M	Double pyosalpinx	July 17	R
421	Birmingham	Dr. Grinling	35	M	Double pyosalpinx	July 27	R
422	Eccles	Dr. Cox	33	S	Chronic ovaritis	Aug. 13	R
423	Birmingham	Mr. Bracey	19	S	Double pyosalpinx	Aug. 13	R
424	Bromfield	L. T.	33	S	Chronic ovaritis	Aug. 15	R
425	Tamworth	Dr. Fausset	31	S	Chronic ovaritis	Aug. 30	R
426	Leicester	Dr. Clifton	39	M	Chronic ovaritis	Sept. 6	R
427	Birmingham	Dr. Jacobs	25	M	Chronic ovaritis	Sept. 6	R
428	Birmingham	L. T.	23	S	Double hydrosalpinx	Sept. 10	R
429	Birmingham	L. T.	31	M	Double pyosalpinx	Sept. 12	R
430	Birmingham	Dr. Winfield	21	S	Right hydrosalpinx and left pyosalpinx	Sept. 28	D
431	Sheffield	Dr. Matthews Brown	32	M	Double pyosalpinx	Oct. 3	R
432	Talgarth	Dr. Williams	42	M	Chronic ovaritis	Oct. 5	R
433	Rugby	Dr. Simpson	34	M	Chronic ovaritis	Oct. 15	R
434	Edinburgh	Dr. Holmes Morrison	24	S	Chronic ovaritis	Oct. 17	R
435	Wolverhampton	Dr. Blanche	31	M	Double pyosalpinx	Oct. 22	R
436	Birmingham	Mr. Hallwright	30	M	Left pyosalpinx and .. right chronic ovaritis	Nov. 3	R
437	Maidstone	L. T.	29	S	Chronic ovaritis	Nov. 19	R
438	Birmingham	Dr. Kirby	26	M	Double pyosalpinx	Nov. 21	R
439	London	Mr. C. J. Smith	39	M	Double pyosalpinx	Nov. 21	R
440	Alfreton	Mr. Warters	27	M	Chronic ovaritis	Nov. 27	R
441	Leicester	Mr. Bryau	41	M	Double pyosalpinx	Nov. 30	R

No.	Residence.	Medical Attendant.	Age	M or S	Disease.	Date.	R or D
1888.							
442	Rugeley	L. T.	24	S	Chronic ovaritis	Dec. 4	R
443	London	Dr. Walker.	31	M	Chronic ovaritis	Dec. 5	R
444	Dudley	Mr. Bradley	29	M	Double pyosalpinx.....	Dec. 7	R
1889.							
445	Kingswinford ..	Dr. Turner	38	M	Double pyosalpinx.....	Jan. 4	R
446	Horsforth	Mr. De Renzi.....	27	M	Double pyosalpinx.....	Jan. 8	R
447	Birmingham	Dr. T. Ord	35	M	Chronic ovaritis	Jan. 2	R
448	Stourbridge	Dr. Edis	25	M	Chronic ovaritis	Jan. 14	R
449	Hull	Mr. Hubbard	36	M	Double pyosalpinx.....	Jan. 21	R
450	Birmingham	Dr. Wilson	33	M	Right pyosalpinx and .. left hamatosalpinx	Jan. 22	R
451	Birmingham	Mr. Freer	23	M	Double pyosalpinx.....	Jan. 29	R
452	Manningham	Dr. Smyth	35	S	Chronic ovaritis	Feb. 4	R
453	Shrewsbury	Dr. Withers	24	S	Chronic ovaritis	Feb. 5	R
454	Birmingham	Dr. Fairley	45	M	Double pyosalpinx.....	Feb. 8	R
455	Pareham	Mr. Hallwright	34	M	Hydrosalpinx	Feb. 2	R
456	Macclesfield	Dr. Clarke	34	M	Pyosalpinx	Feb. 14	R
457	Birmingham	L. T.	33	M	Chronic ovaritis	Feb. 21	R
458	Middlesbrough...	Mr. Hinshelwood ..	40	M	Chronic ovaritis	Mar. 1	R
459	Birmingham	Mr. Newton	23	M	Double pyosalpinx.....	Mar. 1	R
460	Derby	Mr. Hough	32	M	Chronic ovaritis	Mar. 5	R
461	London	Dr. Sunderland	26	M	Chronic ovaritis	Mar. 9	R
462	Treherbert	Dr. Makuna	26	M	Chronic ovaritis	Mar. 9	R
463	Hull	Dr. Hardey	35	M	Chronic ovaritis	Mar. 10	R
464	Manchester	Dr. Perkins	31	M	Left pyosalpinx and .. right chronic ovaritis	Mar. 20	R
465	Birmingham	Mr. Whitecombe	—	M	Double pyosalpinx.....	Mar. 21	R
466	Dudley	Dr. Price	30	M	Double pyosalpinx.....	Mar. 21	R
467	Inverness	Dr. Chapman	27	M	Double pyosalpinx.....	April 2	R
468	Birmingham	Dr. Ord	33	M	Chronic ovaritis	April 9	R
469	Bristol	Dr. Gibbs	33	M	Double hydrosalpinx...	April 9	D
470	Preston	Mr. Spear	19	S	Exanthematic ovaritis ..	April 10	R
471	Birmingham	Dr. Kenny	24	M	Double pyosalpinx.....	April 13	R
472	Birmingham	Dr. Smith	39	W	Double pyosalpinx.....	April 30	R
473	Birmingham	L. T.	27	M	Double pyosalpinx.....	May 2	R
474	Hebden Bridge ..	Dr. Wilson	30	M	Double pyosalpinx.....	May 6	R
457. Op.—Right appendages removed (the left appendages had been previously removed on the 3rd January, 1885).							
458. Op.—Left appendages removed (right appendages congenitally absent).							

In 474 cases there have been twelve deaths, giving a mortality of 2·5 per cent.

In reference to the above list of cases I have first of all to say that it is so difficult in many instances to decide exactly what the operation was performed for, that a few of these will be found to appear also in a list of cases in which the appendages are regarded as being removed for myoma. That is to say, in the presence of a myoma and double pyosalpinx or double hydrosalpinx it will lead to endless confusion; indeed, the effort would be impossible to place these in subdivisions, and therefore I have placed a small number of the cases in both returns in order to keep a clear, logical information of the actual proceedings. In operations of removal of the appendages it is necessary to make such subdivisions as will indicate as clearly as possible the purpose for which the operation is undertaken, but in some, as I have just said, it is impossible to indicate which is the leading feature of two such serious conditions as myoma and hydrosalpinx.

An anonymous writer in the *Lancet* has maintained that such operations should not be classified on any other grounds than their

mere anatomical relations, and that the intentions and purposes of the operation should not enter into the elements of classification at all. This, of course, is a conclusion which will not bear investigation for a moment, for we are at once met by the difficulty that it would be impossible to recognise any distinction between the operation for the induction of premature labour and the crime of abortion-mongery, unless we had distinctly in mind the intentions and purposes of the operation. Not only so, but in the case of an amputation at the lower third of the thigh for a smashed knee-joint there are precisely the same anatomical relations as when the operation is done at the same point for chronic inflammatory disease, yet it has long been the practice to separate in statistical tables primary operations from those of a secondary character. We have therefore many points to take into consideration besides mere anatomical details in the classification of operations. This is strikingly the case in the operations for removal of the uterine appendages, where we have a clear and precise division at once rendered necessary by the fact that in certain groups of cases it is absolutely essential to remove the appendages on both sides. Thus, if we operate for the arrest of the hæmorrhage of a myoma, or for the purpose of reducing its size, it would be perfectly futile to remove the appendages on one side only, unless those on the other side were already absent. So if we desire to prevent impregnation in such rare cases of deformity as I think may justify the removal of the uterine appendages, in order that risk of life may not be incurred, both sides of the uterus must be rendered sterile.

On the other hand, actuated by the sound principle that no organ should be removed which is not diseased in past time, I refrained, in all the cases of various forms of chronic inflammatory mischief of the uterine appendages which came under my care, from removing both sets of appendages when they were ascertained to be healthy. At first sight it would certainly appear as if there were no good grounds for interfering with the second side when only one side was diseased, whether the disease be characterised by occlusion and distension of the tube, or by dense adhesions which render the functions of the organ impossible and give rise to such intolerable suffering as to make life a burden. But first-sight conclusions upon short experience are often found to be fallacious, and I greatly fear that the conclusions at which I had arrived on this point, and upon which I continued to act for a long time, will not bear the test of careful investigation. I have been made painfully familiar with the frequency upon which operations of this kind have proved absolutely useless for the purposes desired, and where the disease had recurred on the other side, and demanded a second surgical interference.

I therefore repeat here the evidence which was in my possession

up to the beginning of last year, consisting of the history of all the cases of unilateral removal of the uterine appendages on account of chronic inflammatory disease operated upon by myself up to December 9th, 1884, at which time I had completed my first series of one thousand cases of abdominal section. The reasons for this selection are, I think, sufficient, the strongest of them being that the time which had elapsed gave a very fair period, though by no means a complete one, at the conclusion of which one might consider the after-histories of the cases complete. Now, we are more and more certain that it requires from two to four years to enable us to judge, in such instances, of the value of our operative interference, and at the time of my original publication of this evidence I was so persuaded of the justice of this conclusion that I have ceased to act on any other, and I have therefore practically no further evidence to give upon the subject.

I may here say that I removed this short list of twenty-seven cases from the general list for the reasons given in the subsequent paragraphs, and which may be briefly summed up in the statement that a unilateral operation is an incomplete operation, that the chances are greatly in favour of a second operation being required, and that this second operation has a mortality altogether disproportionate to the first proceeding.

The cases are twenty-seven in number, and as the operation proved fatal in one of the cases the enquiry is limited to twenty-six. This group may be subdivided as follows:—

	Cases.
Abscess of ovary	1
Chronic ovaritis, with adhesion	2
Hæmatosalpinx.....	4
Hydrosalpinx.....	4
Pyosalpinx.....	15

These twenty-six form, curiously enough, as nearly as possible one-fourth of all the cases that I operated upon, during the period of one thousand cases, for chronic inflammatory disease of the uterine appendages. But the relations which this group of twenty-six cases have to the general relations of the total cases of this kind operated upon indicate very remarkable conclusions. Thus, pyosalpinx is unilateral relatively to hydrosalpinx as about seven is to four; hydrosalpinx is unilateral relatively to hæmatosalpinx as about four is to one; and hydrosalpinx is relatively frequent to chronic ovaritis with adhesion, as eight is to one. Without being exactly cognisant of what the relations might prove to be on careful examination, I was abundantly aware that the commonest cases of pelvic suffering among women, matting of the pelvic contents, or glueing of the ovaries and tubes to all the other organs, with the occlusion of the tube and its distension either by serum or pus, were almost uniformly bilateral. I was also perfectly aware of

the fact that hydrosalpinx was almost uniformly symmetrical; but I have been profoundly struck with the curious fact that we may find a large pyosalpinx densely adherent, with its corresponding ovary, to other organs on one side, and a perfectly healthy set of appendages on the other; and it was the frequent recurrence of second operations in this class of cases which struck me so forcibly as to lead me into this special research, the more so as it was also in this group that I met with cases of death from neglect of second operations.

We now know that pyosalpinx has a lethal significance far more serious and extensive than any of us could have dreamed of in the beginning of this kind of practice, some ten years ago. On the contrary, whilst I cannot say that I am free from suspicion that hydrosalpinx is occasionally fatal, I cannot be very well brought to believe that its risks are great, and I do not think that we could imagine chronic ovaritis, with adhesion, having a fatal result. But the curious thing is that, over the whole group of these diseases, the amount of suffering is not in proportion to the risk of life which is run, but is directly the reverse.

I have over and over again removed large rotten Fallopian tubes, distended with eight or ten ounces of pus, where there has been hardly any pain at all, and where the symptoms have been almost entirely confined to mere general constitutional disturbance.

Two years ago I removed from the wife of a medical practitioner of this town a huge unilateral pyosalpinx, just on the point of bursting, which undoubtedly had not existed more than twelve or fourteen days. With equal certainty this pyosalpinx would have burst and killed the patient within a week, and yet she had no great pelvic pain from the beginning of her illness to the end of it. I had the utmost difficulty in persuading her husband to permit me to perform the necessary operation, but when it came to be performed in his own presence, nothing could exceed his expressions of gratitude for the successful firmness with which I pressed the interference which was urgently demanded.

In analyzing the list to see in what direction light can be shed upon this interesting group, it is first of all to be noted that of the twenty-six women only four were single, and I happen to know that of these four two were not virgins. Of the twenty-two women who were married, nine only had had children before being operated upon at all, and as they had all, with the exception of one, been married a number of years, this large disproportion of sterility, nearly 42 per cent—has a very palpable significance. Of these twenty-two women, all, with one exception, so far as I know, maintained marital relations after the first operation, but in only three cases have they since become pregnant—that is, there has been a contingent fecundity of little more than 14 per cent.

Of the twenty-six, a second operation has already been required in one case of hydrosalpinx, one case of hæmatosalpinx, one case of chronic ovaritis, and one case of pyosalpinx. In the cases of pyosalpinx there are five of them already dead, under such circumstances as make it absolutely certain that the other side had become diseased, ruptured, and given origin to acute peritonitis. I know that this is the case in four of them, and Dr. Thelwell Pike, in the following letter, gives fairly conclusive evidence that this was the case in the fifth:—

“Malvern, December 24th, 1886.

“MY DEAR TAIT,—Miss C. died some two years ago, and I have never ceased to regret that both appendages were not removed at the time of operation. She went away into Devonshire, and when there, so far as I can get the history, she was seized in the same way as when you saw her, and died in forty-eight to sixty hours from, it was stated, acute peritonitis; in fact, I have no doubt the other appendages became diseased, and if she had been here I have no doubt you would have relieved her. Never again will I consent to only one set of appendages being removed under similar conditions.”

The following table is an abstract of the cases:—

No.	Initials.	Residence.	Medical Attendant.	Age.	Month.	Disease.	Operation.	Date.	R.†	Remarks.
Abcess of Ovary.										
1	C. P.	Sussexwick	Dr. Payton	25	s	Right side	Removal	Aug. 14, 1883	R	Will require second operation.
Chronic Ovaritis, with Adhesion.										
2	C. A.	Nottingham	Dr. Howitt	30	s	Left side	Removal	April 8, 1884	R	Will require second operation.
3	— L.	Leamington	Dr. Farley Wilmore ..	28	m	Left side	Removal	May 27, 1884	R	Second operation has been performed.
Hæmatosalpinx.										
4	S. R.	Stafford	Dr. Cookson	40	m	Left side	Removal	Nov. 1, 1883	R	Will require second operation
5	H. B.	Dudley Port	Dr. Price	30	m	Left side	Removal	Dec. 17, 1883	R	Has never become pregnant.
6	E. K.	West Bromwich ..	Dr. Lawson	30	m	Left side	Removal	July 12, 1884	R	Second operation performed.
7	M. H.	Sussexwick	Dr. Pike	31	m	Left side	Removal	Oct. 29, 1884	R	Requires second operation.
Hydrosalpinx.										
8	E. T.	Birmingham	Mr. Walkin Williams.	28	m	Right tube	Removal	May 23, 1879	R	Has never become pregnant, and still suffers.
9	E. W.	Birmingham	Mr. Lawson Tail ..	37	m	Left tube	Opened and drained	April 13, 1880	R	Has never become pregnant.
10	H. P.	Birmingham	Sir James Sawyer ..	39	m	Right tube	Removal	Sept. 27, 1882	R	Has never become pregnant.
11	E. B.	Birmingham	Dr. Pugh	36	m	Left tube	Removal	May 5, 1884	R	Second operation performed
Pyosalpinx.										
12	M. F.	Birmingham	Mr. Greene	26	m	Left tube	Opened and drained	Mar. 28, 1881	R	Died for want of second operation
13	E. T.	Walsall	Dr. Sharpe	—	m	Right tube	Removal	Oct. 7, 1881	R	Died for want of second operation.
14	L. W.	Birmingham	Mr. Newton	18	s	Double	Opened and drained	Dec. 29, 1881	R	Died subsequently from incomplete operation
15	E. B.	Birmingham	Mr. Briggs	27	m	Left tube	Removal	Aug. 17, 1882	R	Never been pregnant.
16	A. A.	Longton	Mr. Ashwell	36	m	Left tube	Removal	Oct. 15, 1882	R	Has had two children since, and is again pregnant.
17	H. C.	Malvern	Dr. Pike	19	s	Right tube	Removal	Nov. 7, 1882	R	Died for want of second operation
18	J. K.	Birmingham	Dr. Kenny	39	m	Right tube	Removal	Nov. 22, 1882	R	Has not been pregnant; will probably require second operation.
19	E. G.	Birmingham	Dr. Welch	21	m	Left tube	Removal	April 3, 1883	R	Has had one child since.
20	M. L.	Birmingham	Mr. Hallwright	29	m	Right tube	Removal	July 26, 1883	R	Second operation performed. Died.
21	E. S.	Birmingham	Dr. Wilson	30	m	Right tube	Removal	Aug. 28, 1883	R	Has had one child since.
22	E. M.	Birmingham	Mr. Mann	36	m	Left tube	Removal	Aug. 29, 1884	R	Will require second operation
23	J. S.	Nuneaton	Mr. Nason	34	m	Left tube	Removal	April 17, 1884	R	Will require second operation
24	M. G.	Pillongley	Dr. Beednell	25	m	Left tube	Removal	April 17, 1884	R	Died for want of second operation.
25	M. B.	Birmingham	Dr. Taylor	29	m	Right tube	Removal	July 1, 1884	R	Cannot be traced.
26	E. B.	Edinburgh	Dr. Hart	26	m	Left tube	Removal	Oct. 11, 1884	R	Requires second operation.

The asterisks indicate those patients who had been pregnant before operation.

† Recovered.

From recent examination of seven of the cases on the list, I am perfectly satisfied that they are in such a condition as to warrant the belief that they will all require a second surgical interference. It will thus be seen that the unilateral operation has already been proved in thirteen out of twenty-six cases to be an absolute failure, and to have been successful in the sense that it has left the functions of the other side unimpaired, the disease not having there recurred, in only three out of twenty-six. It will be remembered that in one of these latter cases the husband and medical attendant of the patient strongly objects to that particular form of success.

The confusion into which this kind of gynæcological work has been thrown by the introduction of such unfortunate terms as "Battey's operation," "spaying," "normal ovariectomy," and "oöphorectomy," is very well illustrated in the group of cases now under consideration, and it justifies me in making another plea for the use of a term such as "removal of the uterine appendages," or any such other which will not involve either personal association or theoretical conclusions, so far as a term can do so, of the operation performed. To term these operations by the name of any particular person is, of course, ridiculous; to speak of the removal of a suppurating Fallopian tube as an "oöphorectomy" is nonsensical, and still more absurd would it be to speak of such an operation as a "spaying" or "castration."

All other methods of cataloguing these cases than the one I suggest are open to this initial difficulty: that cases in which the removal of the uterine appendages is undertaken group themselves, from one point of view, at once into two classes—those in which it is absolutely essential to remove the appendages on both sides, and those in which it may be possible to remove only the appendages of one side. But here we come to a group in which the question has yet to be decided as to whether it is necessary or advisable to make the operation of necessity bilateral. So far as I know, the present contribution is the first and only evidence to be obtained on the subject, and it is quite likely that opinions may vary as to the conclusions to be derived from it; and I for one am quite prepared to admit that, so far as it has gone, by itself it is not large enough to base any absolute conclusion upon. But the opinion which I have formed from it—which is substantiated by more recent investigation not yet mature enough for publication, and which has made an increasingly strong impression on my own mind—is that, if a patient is suffering sufficiently to justify abdominal section for chronic inflammatory disease of the uterine appendages, and only one side is found to be affected, the operation, to be of that lasting and complete benefit to the patient which we desire all our operations should be, must be bilateral. On such a point as this, of course, the desire of the patient must be paramount,

as upon most others; and if a patient places herself under my care for such an operation, and makes it an imperative condition that I should not under any circumstances remove the second set of appendages if they were found healthy, I should yield to her decision; but I should argue the question with her, and advise her not to subject herself to the risks of a second operation, as seems to be by far the greater tendency in unilateral operations. The list that I now present puts such incomplete operations in a very unsatisfactory light.

As one of the rarer results of chronic ovaritis we get pronounced hypertrophy of the glands, and this occurs distinctly in two forms, as it affects the follicles of the gland or its fibrous tissue. There may be, as Dr. Ritchie and Dr. Fox have pointed out, an increased formation of the number of follicles; this, in all probability, being a pathological feature of the ovarian hyperæmia I have described. Follicular hypertrophy may take the form of increase in size of individual follicles, and constitute, as first shown by Rokitansky, a variety of cystic growth; and this is, as both Dr. Duncan and myself have pointed out, a frequent character of the ovaries which have to be removed on account of the suffering inflicted by chronic ovaritis.

In fact, there seems to be a close and hitherto unsuspected connection between cystic disease of the ovary and some of the most severe uterine symptoms that patients suffer from. Thus, I have removed the ovaries of a large number of women suffering from profuse and destructive hæmorrhage, due to the presence of uterine myoma, and in the majority of these cases I have found the ovaries cystic. But it may be noticed that these cysts have not always been like the large tumours for which we perform ovariectomy, and the ovaries containing them have very often been no larger than walnuts. In them the ovarian tissue had been replaced by cysts, and when those cysts were emptied there was very little left besides their walls. On the other hand, some of the cystic ovaries in these cases of myoma had attained quite a large size, so that there has arisen a difficulty in deciding as to whether one was operating for the removal of cystic ovaries, or removing the ovaries for the purpose of arresting hæmorrhage in cases of myoma. Indeed, the difficulty was to say whether it was a case of ovariectomy or the so-called "oöphorectomy." The result has been, as I shall state at length in another chapter, that I have completely discarded the use of this latter term, because, unless some kind of conventional distinction is made, it will be perfectly impossible to classify our cases in any logical manner, or for any useful purpose.

These small cystic ovaries very often give rise to extremely severe hæmorrhage, even when there is no myoma present, and when there is no suspicion of any chronic inflammation of the

glands. The size of the ovaries is not great enough to justify us in calling them ovarian tumours, and it is highly probable they are nothing more than follicular hypertrophies. Of this peculiar condition I propose here to give in detail three instances.

In June, 1880, I was called by Dr. Collis, of Bridgnorth, to see with him, in consultation, a lady of very eminent social position, on account of persistent metrorrhagia. She was twenty-nine years of age. She had been married six years, and before that had suffered always more or less from a white discharge and irregular and profuse menstruation. Nine months after marriage she was confined of a still-born child, and nearly lost her life from hæmorrhage. Two years after she had another child, living, and in the following year another child, both labours being characterized by unusual hæmorrhage. In 1878 she had a miscarriage, and was alarmingly ill from hæmorrhage. In August, 1879, a fourth child was born, about six weeks before the full time, when again the hæmorrhage was extreme.

Dr. Collis has favoured me with the following notes of the progress of this most interesting case:—He saw her first on May, 31, 1880, when he was informed that, up to a fortnight before his visit, she had missed three menstrual periods, but that during the fortnight there had been a continuous flow. Neither she nor her husband thought it possible that she was pregnant. They regarded it as her usual profuse and protracted menstruation; but on examination Dr. Collis found the uterus enlarged. He kept her in bed and gave her astringents, and afterwards ergot and bromide of potash. Finally he had to plug the vagina, and then he telegraphed for me to see her with him. I saw her on the evening of June 13th, and found the patient very anæmic, and the uterus enlarged as if by a pregnancy of the third month. The cervix being closed, it was clear that we must dilate, and for that purpose I introduced my instruments, which act by continuous elastic pressure. In a few hours dilatation had proceeded so far that, after placing the patient under ether, I was able to empty the uterus of a large quantity of clot and some villous cysts. These, I presume, were remains of a chorion of which the villi had undergone cystic dilatation, but nothing in the shape of membranous or placental structure could be discovered. Recognizing the urgent necessity of there being no more hæmorrhage, I took great pains to remove everything from the uterus, and I scraped the whole of the inner surface over with a curette. She had no further loss, and made a good recovery till July 10th, when her period came on very profusely, lasted ten days, and left her very anæmic and exhausted. During the whole time she took large doses of bromide of potash and ergot, but with no apparent effect. Hæmorrhage again occurred on July 29th, by which time she had been removed to Malvern, where she was under the care of Drs. Pike and Weir.

The hæmorrhage was extreme, and everything was tried, including hypodermic injections of ergotin, without any avail. I was sent for on August 3rd, and found the patient in the very last stage of anæmic exhaustion. I removed a plug which had been placed in the vagina, found the uterus perfectly small and normal, explored it with the alligator-forceps, but found nothing in it, and then I applied solid nitrate of silver freely to the inside. This stopped the hæmorrhage for about twenty-four hours, but after that it came on, and I was sent for again on the 6th. At my visit on the 3rd I had informed the husband that, if the nitrate of silver did not check the hæmorrhage, I knew nothing short of a surgical operation which would; but said nothing to him as to the nature of the operation I intended to perform. When telegraphed for on the 6th, I replied that I should bring my assistant and everything prepared to operate if it was thought desirable.

When I reached the house I met the husband, a man of distinguished position and great intelligence, at the door. He greeted me with the remark that he did not know what I proposed to do, that he left it entirely to me, but that he was perfectly sure the only thing which would give either temporary or permanent relief would be removal of the appendages. As this was exactly my own notion, and was readily agreed to by my colleagues in the case, I at once proceeded to carry it out, my only fear being that we had delayed it too long. She was blanched beyond my powers of language to describe, and she had those swollen, waxy lips which are rarely restored to their original condition. There was no difficulty in the operation, and both ovaries were found to be cystic, and about the size of mandarin oranges. The uterus was perfectly normal in size and consistence when I had it between my fingers. The incision was only two-and-a-half inches long, and its bleeding points were indicated by a flow of serum almost devoid of colour. For about an hour after the operation I gave up almost all hope of her recovery. Dr. Pike and I were in almost constant attendance upon her for five days, during which she had some ups and downs, but finally she got right, and has never lost a drop of blood since. She has had the usual flushes and other slight indications of the climacteric, but these are wearing off; and in the last letter I have had from her husband, a few days ago, is the sentence: "It only remains for me to express our united gratitude for your skill and attention; for, humanly speaking, I shall always look upon you as her saviour."

Putting aside, as far as possible, all personal gratification at such an expression, I desire only to put in this evidence given by a highly educated layman, fully conversant with his wife's condition and what was done for her, in favour of an operation upon which only those who have not successfully tried it are endeavouring to cast obloquy. The only credit in this case I desire to assume is

that I had the courage of my convictions, and that I proceeded, as a last resource, to a step which, if I had regard to metropolitan opinions, I should not have attempted. Had the case been unsuccessful, the position of the patient was such that the proceeding would have been widely, and I fear adversely, criticised.

Looking at the ovaries of this case I notice that there is little, if any, real ovarian tissue left. There is hardly anything but the thin walls of a number of dilated follicles, from which it is very difficult to believe that a healthy ovum could be sent into the tube. This naturally raises the question as to whether the imperfect ovulation, which was the first cause of my being sent for to her, was the result of this follicular hypertrophy. I think it very likely that it was so. The condition seen in these ovaries must, I think, be something special, and not merely the early stage of cystoma, for I never hear such a terrible story of hæmorrhage from the lips of a patient in whom an ordinary cystoma has grown, as I have to narrate about the three cases in whom I found these small cystic ovaries, and from whom I removed them with perfect success.

The second case was in some respects more remarkable than the first, though it is not necessary to occupy so much space with its detail. She was thirty-nine years of age, had been married at fourteen years of age, and was confined of her first child before she was sixteen; her second at seventeen; eight months after she had a miscarriage, and then for the next ten years had a baby every year. At each confinement the hæmorrhage was very great, and two or three times she was supposed to be dying from this cause. As she had had no menstruation for twelve years, being either always pregnant or suckling, she could tell nothing about this matter until she became a widow at twenty-eight. She married again about four years ago, and during her widowhood her menstruation had been far too frequent and too profuse, and she had been almost constantly in the doctor's hands on that account. Since her recent marriage she has had eight miscarriages in forty months, the first being at seven months and the others between four and five. She was admitted into the hospital in February last, when pregnant at the third month. She was put upon chlorate of potash and biniodide of mercury, in order to avoid the repetition of the miscarriage, and she took every precaution to assist us in this, for both she and her husband were very anxious for a living child. In spite of everything, however, she miscarried at the fifth month, and as nearly as possible died from the hæmorrhage. During May, June, and July she had most profuse menstruation, though active treatment was employed, and when admitted into hospital again she was a completely broken-down anæmic woman, whose desire was to die if nothing more could be done for her. In this case it did not occur to me to remove the appendages, and that proposal

originated with my colleague, Dr. Hickinbotham, at the consultation held on the case. I am bound to say I did not regard the idea with favour at first, and it was only after prolonged discussion with my colleagues, and finally at the earnest and frequently repeated request of the patient herself, that I undertook it. This request was based on her knowledge derived from a patient in the same ward who was recovering from the operation. Here again the ovaries were cystic, just as in the first case, the cysts being small and thin-walled, but occupying the whole of the ovary. We may again ask, Did they account for the repeated incomplete ovulation as well as the hæmorrhage? Such a question needs a much wider experience for its solution. Whatever be the explanation, the result is brilliant, for the woman made a speedy recovery, and now, not yet twelve months since the operation, is in robust health—such health, in fact, as she has never known before.

The third case was sent to me by Dr. Meredith, of Wellington, in Somersetshire, and I give the history in his own words:—

“In May, 1877, I had to attend a young woman, aged twenty, on account of excessive menstrual discharge, which had been going on for some weeks.

“The previous history of the case was briefly this:—The patient, as a girl, had always been considered delicate up to the menstrual period—which, with her, began when she was fifteen—although she was well-formed and tall. Once the courses became established, she began to gain strength and fatten. The catamenia were regular, but scanty—only about three diapers at a period; still she felt well, and gave this no particular thought. Her parents are healthy, and so are her brothers and sisters. One day in March of the year mentioned (1877), while menstruating, she assisted in lifting a bookcase. She felt the effort affecting her, and the discharge, instead of terminating at the expected time, went on day after day.

“When I saw her she was in an exhausted condition from the loss, and suffering pain, &c., in the lower part of the abdomen, indicating the presence of a certain amount of local inflammatory action. After the administration of opiates this condition of irritability subsided, and after a while I obtained permission to make a digital examination of the vagina and cervix uteri.

“The information I got from this was that there was no appreciable difficulty in introducing the finger; the os uteri was patulous, with a blood-clot in it, and the cervix elongated. There was nothing special to note in regard to the condition of the uterus—no marked version or flexion. Now, a very natural question suggested itself, and I have no doubt it arises at once in your minds—namely, Was not the case one of miscarriage? A question which I put to the patient some time afterward, bearing on this, was met by a negative answer—just what I might have

expected. But my duty was to arrest the hæmorrhage and bring about recovery, if I could. To this end I administered ergot, acids, bromide of potassium, chlorate of potash, digitalis, and cannabis indica. The last-named three in combination seemed to answer well for a while, then there would be a relapse. Cloths dipped in vinegar-and-water were applied over the vulva and lower part of the abdomen; cold water, vinegar-and-water, and carbolic acid solution were at intervals injected into the vagina, and, of course, absolute rest in bed was enjoined, with everything cold in the way of food and drink.

"In spite of everything, the discharge continued more or less until July. At times there would be nothing but a pink, sanguineous staining on the cloth. The patient soon learned to dislike this appearance, as she had always a great deal of backache with it, from which she was only relieved after the expulsion of blood-clots. The explanation of this, I take it, was that the clot formed in the os uteri, and, owing to the flow not being enough at times to carry itself off as a whole, the fibrin separated at the uterine outlet and in the uterus as well, staying there gathering in volume, while the liquor sanguinis escaped, and produced the stains mentioned. The fibrinous part, in thickening, rested upon the walls of the os, distending it, and, as in labour or any other form of tension at the os uteri, the discomfort was referred to the sacral region—the region of backache with many women. After going on in this way for a time, I decided to apply pure carbolic acid to the interior of the uterus. I did this in the usual way, by means of a piece of cotton-wool wrapped around an ordinary uterine sound. The result was satisfactory for the time: the discharge stopped for five months, the patient recovered strength, and was able again to go about and enjoy herself.

"In the beginning of 1878 the menses reappeared, but nothing much to complain of at first; then the loss assumed a more persistent character. Drugs seemed to have very little influence now, nor had the intra-utrine application of carbolic acid the same arresting influence as at first; still it exercised a certain amount of staying power. Thus matters went on unsatisfactorily to all concerned. Toward the end of 1878 the loss was not very great, still it recurred at short intervals; but on Christmas eve she got excited with some of her friends, and then it came on profusely. There was always tenderness over the ovaries, at times more over one than the other, and, of course, the usual sympathetic tenderness along the spine.

"Finding that I was unable to afford the relief I wished, I urged the patient to go to the Women's Hospital at Birmingham, to be under the care of Mr. Lawson Tait, with whom I had had some correspondence regarding the case. Accordingly, on January 15th she went thither. She was thin, weak, and anæmic at the

time. A few days afterward I had a note from Mr. Tait, saying that he had dilated the uterus and thoroughly explored it, and could find nothing amiss with it, only that the fundus was a little enlarged—nothing more.

"A few days after admission nitrate of silver was applied to the cavity of the womb, and repeated three times between that and February 15th. On the 19th the loss ceased, and no further application was made. The patient had mixtures given her, consisting of ergot, bromide of potassium or chlorate of potash, and, after the cessation of the discharge, dialyzed iron.

"She left the hospital, apparently recovered, on March 1st, and went to a convalescent home, where she stayed for some time and was much improved. In due course she returned home to Wellington. On the night of her return the discharge began again.

"I knew nothing of her return, or of the recurrence of the discharge, until she had been at home for some weeks. During the interval she tried the effects of medicines which some neighbours procured for her—getting into a sort of desperation state, which we can all pardon under the circumstances. I now tried the effects of cold water hip-baths, and with some apparent good results. Mustard poultices over the ovaries were followed by no marked benefit. Swabbing the interior of the uterus produced some relief. After a time I introduced a piece of nitrate of silver into the cavity of the uterus, and left it there. This altered the character of the discharge; but, in spite of all, the loss persisted. I frequently left her alone, desiring her to keep still and take no medicine at all; the result was the same—always losing.

"On July 9th last I gave her a hypodermic injection of ergotine, which was followed by a stoppage of the discharge for about three weeks. On August 5th I again sent her to the Women's Hospital at Birmingham, under the care of Mr. Tait. At the time the patient was anæmic, thin, and weak, and hardly able to stand."

I readmitted the patient in August, 1879, and removed both ovaries on the 8th of that month. The ovaries were large and flabby, and occupied by a number of distended follicles forming cysts. They were also chronically inflamed, for there was evidence of old lymph here and there on their surfaces, and they were somewhat adherent. The patient went home in a few weeks after the operation, and speedily gained health and strength. She has never menstruated since, and enjoys perfect health (May, 1882).

In many cases which doubtless belong to this category we find the ovaries enlarged and their substance consisting of a mass of small cysts of pretty uniform size, so that the naked-eye appearance is almost that of a mass of "boiled sags," also the denser tissue of gland having been displaced. I have no doubt that the explanation of the change is that the normal growth of the follicles is perverted

into increasing activity on the one hand, and their retention as immature cysts is secured, on the other, by the destruction of the mechanism by which they are normally ruptured.

From these cases, and from many others quite similar in my more recent experience, to repeat the details of which would be wearisome, I am forced to conclude that between these small cystic ovaries and uncontrollable hæmorrhage there is some connection which has yet to be studied, and that in such cases the removal of the ovaries is not only to be justified, but that it is the proper proceeding, the results of these cases having been brilliantly successful.

Associated with similar symptoms are cases in which the ovaries are enormously enlarged by hypertrophy of the follicular and fibrous elements of the glands in normal proportions and relations, so that when microscopic examination is made no distinction can be made between glands which are healthy and those which are clearly in this way diseased. It is noteworthy that the tubes are always correspondingly hypertrophied, and in this combination we have a clear demonstration that the condition is the result of chronic inflammatory change, even though we get none of the appearances of exudation and adhesion which characterize chronic inflammation, especially when it is the result of a decadence of the acute stage.

I have removed ovaries for intractable hæmorrhage and pain which weighed as much as a thousand and twelve hundred grains, yet the most careful and minute examination of the organs revealed nothing more than absolutely normal structure.

Besides this and the more familiar follicular hypertrophy, there is a distinct form of fibrous hyperplasia which is probably the result of that form of chronic ovaritis which attacks the fibrous element, and results in follicular destruction or arrest of development of the proper ovarian cells, and produces an excess of the trabecular structure. It is, in fact, the process of cirrhosis in its second stage, previous to the contraction. The following is a case which I have had the opportunity of watching for many years, and now seems to be verging toward the cirrhotic condition. Both the patient and I are agreed that if I could have done for her sixteen years ago what I could do now, if it were as necessary, she would elect to have her ovaries removed rather than pass through the prolonged invalidism to which she has been subjected. She belongs to the upper ranks of life, and therefore has had every opportunity of recovering, and no money has been spared to secure her good health; yet she has been an invalid for about eighteen years, and is so yet, though enjoying better health than she did nine years ago. It would have been cheaper for her, and better in every way, to have had her ovaries removed years ago.

She is now about forty-six years of age, is still a pretty, delicate blond of nervous temperament and most refined cast of features, and has been married about twenty years. She has a history of hyperæmia of the appendages at an early age, and has had always very profuse, and generally irregular, menstruation until within the last three or four years, when it has been scantier and less frequent. From November, 1871, until she came under my care she had had only one normal period (in seven months), and another in April, 1872. From the former date a constant offensive brown discharge had been present, which was increased by exertion. She had pain and straining after coitus, pain on defecation, loss of appetite, and frequent sickness. Examination revealed a condition of enlargement and tenderness of the uterus, openness of the cervix, and decided retroflexion of the fundus, with a tendency to retroversion of the whole organ. The cavity was not larger than normal, but the passage of the sound gave great pain. The displacement was easily reduced, and then it was found that both ovaries were very much enlarged and tender, the left especially. They could both be distinguished by bimanual touch as quite free from adhesion, readily moving about. I introduced a ring pessary to rectify the displacement, much to her comfort, and directed the use of iodine-paint in the manner previously described. She also took a tonic mixture consisting of cinchona and angostura, and the uterine cavity was occasionally washed out with a weak solution of neutral acetate of lead. The latter part of the treatment was discontinued after a few months, but the counter-irritation and the pessary were persevered in, along with occasional recourse to tonics. In October, 1875, the brown discharge had almost disappeared, and the right ovary could be felt to have distinctly diminished in size. The uterus was also straight and the cervix closed, and the whole organ of a much less size. Early in November there was a slight menstruation lasting three days, and in January of this year there occurred quite a normal period of four days, followed by rather profuse leucorrhœa. In February, as the expected period did not occur, I ordered her small doses of iron, in the form of ten drops of Parrish's syrup of the phosphates, taken thrice daily.

For five years after that the treatment was varied, both by myself and others, but nothing seemed to have any very marked effect, unless it be residence at Kreuznach and the prolonged use of the waters. Nature seemed to be working her own cure, and the only question to be discussed is: Would it not be better, in such a case as this, to run a slight risk in the removal of the ovaries, and so effect a speedy and permanent cure? I think it would, and so does my patient. She is now beginning to have a premature climacteric, and is decidedly improving in health. There is probably a chronic ovaritis of occasional occurrence

in chronic phthisis; for though the rule in that disease is to have ovarian atrophy, evinced first in dysmenorrhœa and finally in amenorrhœa, yet I have seen a few cases where the menstruation was profuse, irregular, and characterized by the other symptoms of chronic inflammation of the uterine appendages. I have seen such conditions temporarily after smallpox, and frequently after scarlet fever, in adolescent women. One case I have also satisfied myself of in early acquired syphilis. There is a distinct form of syphilitic metritis, as pointed out long ago by Mr. Langston Parker, and no doubt in these cases the ovaries are involved.

Arthur Farre has noticed an intense red colouring of the ovaries in cardiac disease, and I have more than once found that intractable menorrhagia had apparently its origin in valvular disease of the heart, or at least was closely associated with it, in such cases there being often no discoverable lesion of either uterus or ovaries.

I have met with a small group of cases which I can only class under the head of ovarian neuralgia. They have been characterized by acute lancinating pain referred to the region of the ovaries, generally on both sides, coming on paroxysmally, without any reference to the uterine or ovarian functions. No physical signs of disease have been found in these cases, and they have all occurred in women approaching the menopause. They have all been addicted to outbursts of over-indulgence in drink, taken, as they allege, to deaden the pain. Whether this inebriety was a cause or a result of the neuralgia, or whether the neuralgia in some of the cases may have had any actual existence, I am unable to say; though the special character of the pain and its site have been described by the sufferers with a constancy which would seem to vouch for its reality, yet no physical signs of disease were ever discovered. In connection with this affection I would here urge the necessity for the medical profession combating strongly against the wrong women are often allowed to do themselves by taking spirits to relieve ovarian and menstrual pain. No habit can be more pernicious, or more likely to lead to the most deadly mischief, both physical and moral.

A singular condition has been noticed by Dr. Priestley, of intermenstrual pain occurring about midway between the periods, which is almost certainly due to an ovarian condition, though it is not clear of what kind. Since reading his paper I have seen several cases, but have been unable to refer them to any category.

Abscess of the ovary is a condition of extreme rarity, or, at least, it certainly is one which we can rarely diagnose during life, and in the majority of instances probably death occurs from the rupture of the abscess into the peritoneum, without any diagnosis having been made beyond that comprised in the generic term of an attack of "inflammation of the bowels," under which category a

large number of cases are entered in the death register, many of which probably might have been relieved if a more accurate diagnosis had been possible. Of the cases of abscesses of the ovary which recover after rupture we of course only find subsequent traces in the indications of old perimetritis, which are usual after a great many other lesions as well as this. Probably, however, the larger number of cases which have been published as abscesses of the ovary are nothing more than suppuration in ovarian cysts, and therefore belong to an altogether different category from those of which I am now speaking.

True abscess of the ovary is said to occur most frequently in connection with pelvic suppuration of the puerperal woman, and possibly this may be a condition of pretty frequent occurrence. I have, however, for many years past, carefully avoided attending post-mortem examinations of such cases, and therefore I have seen no instance of this kind. The only cases of abscess of the ovary, in clinical experience, of which I have been certain are, with one antecedent addition, included in the previous list. One case I shall narrate in detail, as it possesses great interest, and also because it shows what immense success has been recently made possible by the advances of abdominal surgery.

The patient was sent to me by Dr. Lycett, of Wolverhampton, and I cannot do better than give the history of the case, which he sent to me in a letter, as being quite a model of what such communications should be. It was as follows:—

“She is about thirty-eight years of age, and has suffered for many years from great ovarian pains, rarely free, and much increased at the menstrual periods, which are often fortnightly, scanty, and prolonged for a week or ten days. The left ovary seems the one at fault, being tender and somewhat enlarged; the uterus is conical, but the passage fairly patent. She has had a variety of treatment under my hands, and, though able to afford some relief, yet I see no prospect of permanent good, so that at last I am desirous of your opinion as to oöphorectomy, for her health has materially suffered, as you will observe. She is a weakly, nervous, anæmic person, whose life is a misery, and may probably break down before the menopause. She has not had any children. Several times at the periods her temperature has risen to even 102°, marking some local inflammation, and at these times the pain and tenderness are greater.”

No history could be more graphic, concise, and complete. The only additions I can make to it are that marital life was absolutely unendurable, and that I found the left ovary adherent in the cul-de-sac.

I quite concurred with Dr. Lycett's views, and with his concurrence and assistance I removed the appendages on June 28th. I found the left ovary firmly adherent in front of the

rectum, and to pull it off from its attachment was a work of difficulty. It contained about two drachms of pus, and appeared to be just on the point of bursting into the peritoneal cavity. Had it so burst, she doubtless would have had an attack of acute peritonitis, from which she might have died. The right ovary was shrivelled, so I removed that also. She made a perfect recovery, and not only is cured, but her sexual relations are now possible, so that not only has removal of the ovaries not unsexed her, but it positively resexed her—a statement which I have made about a number of other cases of a somewhat similar kind.

Two cases of abscess in both ovaries, narrated by Mr. C. J. Cullingworth, in the *Lancet* of November 3rd, 1877, illustrate well this unusual disease, and are equally instructive in showing the disastrous results of delay in the performance of abdominal section in cases of doubt, where patients are suffering from pelvic mischief.

The first was a case of a woman, aged forty-five, admitted on January 13th, with vomiting, severe pain in and enlargement of the abdomen. In the lower part of the abdomen was a fluctuating swelling, reaching nearly as high as the umbilicus, quite dull on percussion, and a soft, rounded swelling in the vagina, to the right of the uterus. The morning temperature was low and the night temperature high, showing clearly the presence of pus, as did all the symptoms.

“January 27th.—Thirty-five ounces of pus were withdrawn by the aspirator, without relief.

“February 7th.—An exploratory incision was made, and a large abscess opened in the abdominal walls, outside the peritoneum, with a communication into the abdominal cavity. The patient died a few hours after the operation, and the post-mortem displayed that the source of the mischief was an abscess in the right ovary, which had burst. The left ovary also had become converted into a small bag of purulent fluid.” The case seems to have had a very chronic progress, and if the abdominal section had been done some weeks before it was, there probably would have been a successful result.

The second case is an even more instructive one. About the middle of 1875 she noticed an enlargement of the abdomen, and was suffering from local distress. In June, 1876, this amounted to constant pain in the left iliac region, where there was a distinct hard swelling, tender on pressure. The uterus was quite hard, the vagina was encroached upon, and its upper part exquisitely tender to the slightest touch, causing great suffering. An exploratory puncture was made without result, and after some months' residence in the hospital she was discharged on March 31st, 1877.

She was readmitted in May following, with the symptoms much aggravated, the abdomen uniformly enlarged and universally

tender, and the old tender swelling could still be felt. The night temperature was always considerably higher than that of the morning. She was kept under observation till August 3rd, when she died.

The post-mortem examination revealed old peritonitis. The right ovary was four and three-fourths inches in its large circumference, and three and one-fourth in its shorter, and was a mere shell, filled with offensive purulent fluid. The left ovary was much larger, and formed the large tumour which was felt during life, and this again was filled with a highly offensive purulent fluid.

In such a case as this it is impossible to resist the conclusion that abdominal section, performed soon after the onset of the serious symptoms, would have enabled the surgeon to have relieved his patient.

M. C. Darolles contributes some valuable observations concerning the microscopic examination of ovaries in which ovaritis had resulted in the formation of abscess. He found that the process began in the suppuration of separate follicles, and that these subsequently coalesced, forming abscess of the whole gland. Such cases, he points out, as well as those of suppurative inflammation of the tubes, frequently result in a series of secondary accidents, such as pelvi-peritonitis and acute general peritonitis, which may have a rapidly fatal issue.

M. C. Salamon has narrated a series of cases of tubercle of the ovary; but, as this condition is always associated with tubercle elsewhere, which is of far greater consequence, it can be regarded only as having an interest of curiosity. I have not heard of a case of tubercle of the ovary only.

Hermaphroditism.—If the law of evolution embraces all organized structures—and its details have now been so fully worked out that we may assume that it does—we must accept Darwin's theory of the descent of man. This acceptance at once becomes the explanation of the occasional occurrence of bisexual vertebrates, and consequently of true hermaphroditism in human individuals. Conversely, the occurrence of such malformations may be offered as one among the many proofs which are being accumulated from every quarter in favour of Darwin's theory, for they must be regarded as reversions of type. In the vegetable kingdom the majority of the species are bisexual, though modern investigations have shown most ingenious contrivances to secure the advantages of cross-fertilization.* Even in the more complex organisms of the animal kingdom, bisexuality is met with as high up as the nudibranchiata, while in the next sub-order, the proso-

* See Darwin's "Fertilisation of Orchids," "Cross and Self-Fertilization of Flowers," and Kerner's "Flowers and their Unbidden Guests."

branchiata, most of the groups are unisexual. In the cephalopoda, where other great advances in structure are indicated, unisexuality is the rule. From this point a symmetrically double body is introduced into the schema, though it is met with also in the insecta, and the sexual organs are double, one in each half of the body. But as in the insecta, where unisexuality is the rule, hermaphroditism occurs with some frequency, so it does in the lower vertebrates, the frequency of the malformation diminishing, until in man true hermaphroditism is found very rarely. In all cases of hermaphroditism in animals where unisexuality of the individuals is the rule, the doubly sexed organs are always imperfect, even in insects; and in most of the cases recorded in birds there has been on the male side only a convoluted seminal tube and no testicle, so that the tube might have been taken for an aborted oviduct had it not been, as in one of Simpson's cases ("Encyclopædia of Anatomy and Physiology"), for the coincident presence of the characteristic epithelial appendages of the male. In Simpson's second case I do not think there was any evidence of true hermaphroditism.

The human testicle and ovary being developed from the same blastema, and being really the same organ, it is not surprising that occasionally reversions of type should occur, so that an immature testicle should appear on one side, and an imperfect ovary on the other. According to Simpson, the ovary in these cases appears generally on the left side. This distinguished author has collected from many sources a large number of cases, the descriptions of some of which are not above suspicion; but in others, especially that recorded by Dr. Banon in the *Dublin Medical Journal* for 1852, the facts are beyond dispute; for the examination of the textures of the gland on either side by the microscope completely established that one was an ovary and that the other was a testicle, though both were so immature as to contain no perfect products. There was an imperforate penis, the urethra opening at its root, and behind this a genital canal closed by a perfect crescentic hymen—a fact which at once removes the case from the classes of spurious hermaphrodites already described. This genital canal led up to a small, well-formed uterus with normal relations to the bladder, rectum, and peritoneum, and having at its left cornu a perfect Fallopian tube with a corpus fimbriatum. In relation with this there was an ovary. There was neither tube nor ovary on the right side, but a testicle containing the characteristic tubules, and provided with an epididymis and vas deferens. Simpson calls this true lateral hermaphroditism—that is, where the internal organs, testicles or ovaries, are alike on the two sides, but the external organs represent appearances somewhat like those of the other sex. But it is not clear in any of the cases he quotes that the malformation was anything more than an extension of the

characters of spurious hermaphroditism; and as the glandular element must always be considered as the chief element of sex, it is not a philosophical proceeding to say that both sexes are represented unless both a testicle and an ovary are present. Even when the clitoris is perforated by a urethra as far as the glans, the condition is only that seen normally in the *Loris grivitis*.

This view, which I first enunciated in 1873, has been most fully confirmed by an admirable paper by Professor Morrison Watson, in the *Journal of Anatomy*, October, 1879. He says: "In the gland alone and its structure is to be found the determination of sex. No arrangement of the passage is absolutely distinctive. Even the prostate gland is absent in the males of some animals (elk, red deer, &c.), and it is occasionally present in many female mammals, even women. The lateral hermaphrodites of Simpson are those to whom alone the term *true* can be applied."

In Simpson's third variety, to which he gives the name of "true double or vertical hermaphroditism," he describes the presence of a gland of each sex as present on both sides, or, as he says, "actual sexual duplicity." Without denying the possibility of such an occurrence, I must say that I think it very unlikely, and I have no hesitation in saying that none of the cases he quotes justifies the establishment of this variety. The most complete case is that recorded by Vrolik, and he distinctly states that neither in the structure which he supposed to be testicle nor in that considered to be ovary did he find a trace of histological evidence of the nature of the gland. Mere anatomical position goes for nothing in such a case, for the ovary descends sometimes in the same way as does the testicle, for it also has a gubernaculum. It must also be borne in mind that occasionally appendices both to testicle and ovary are met with, giving the appearance as if the individual had three or even four testicles or ovaries. If such a condition were met with in a hypospadiac male who had at the same time an enlarged prostatic utriculus, as many of the cases quoted by Simpson undoubtedly had, and if the testicular appendix had not descended with the true testicle, the appearances would be exactly as described in most of Simpson's cases, and yet there would be not the slightest reason for the statement that both kinds of glands were present. The only satisfactory test is that of microscopic examination; and so far the evidence goes to show that there is only one kind of true hermaphroditism—that in which there is an ovary on the one side and a testicle on the other.

The cases lately recorded by Leopold, of Leipsic, and C. E. Underhill, of Edinburgh, are clearly cases of descent of undeveloped ovaries into the inguinal canal—instances of hypererchesis.

VIII.

ECTOPIC PREGNANCY AND PELVIC HÆMATOCELE.

AFTER much consideration I have adopted the phrase *ectopic pregnancy*, designed originally by Dr. Robert Barnes, as by far the best which can be applied to the curious and most interesting displacement which we have first to consider, for it gives a convenient and very complete definition without expressing any theoretical explanation of the condition. The cavity of the uterus is the proper *place* for any gestation, but a gestation may be *ectopic* without being *extra-uterine*, as in what has been called the interstitial or tubo-uterine variety. I believe we might call all ectopic gestations "tubular pregnancies," but that would be hardly fair to those who still cling to the belief in the occurrence of the ovarian kind. "Ectopic" includes them all, and therefore I adopt it.

The literature of this subject is very extensive, and the confusion which exists in it is almost as great; but there are two works which stand prominent for different reasons, and to these I propose to make some extended allusions, for I am greatly indebted to both of them for valuable information. The first is that of Dr. William Campbell, a teacher of midwifery in Edinburgh, who published in 1842 a work in which its industrious author has collected, in all probability, all the material up to his time, thus forming a mine from which many a quotation has been made by subsequent writers without any kind of acknowledgment. Campbell seems to have had no great critical acumen, however, and his material is confusing alike in its abundance and its utter want of arrangement. His notions of pathology were of the vaguest kind, and his capacity for believing all that was told him must have been extensive. His work, however, stands as a landmark in the literature of the subject as the first real effort to place into its appropriate position of importance a subject which, up to that time, seems to have been regarded more as a curiosity than as one of the most dreadful calamities to which women can be subjected. He also exhaustively investigated the literary history of the subject, and his book is of great interest in showing how often discoveries have been made and how easily they are forgotten.

A book of a very different order is that of Dr. John S. Parry, of Philadelphia, published in 1876. It is at once remarkable for

its scholarly research and fine critical sagacity. Most unfortunately, this promising author died in the same year, and I never look at the finely-cut handsome young face which looks out upon me from the book as its frontispiece, faced by a pathetic letter from his mourning widow, but I become persuaded that in Parry's death one of the greatest lights in gynaecology of my time was lost to us. Had he lived to give us a second edition of his book, its few incompletenesses would have been filled up and its few errors rectified. Where he has got astray has chiefly been by the delusive use of statistics, a point which I shall deal with by-and-by.

I have already discussed at length my view upon the physiological process of impregnation and the machinery concerned in it, so that I need not do more here than repeat that the uterus alone is the seat of normal conception, that as soon as the ovum is affected by the spermatozoa it adheres to the mucous surface of the uterus; that the function of the ciliated lining of the Fallopian tubes is to prevent spermatozoa entering them and to facilitate the progress of the ovum into the proper nest; further, that the plications and crypts of the uterine mucous membrane lodge and retain the ovum either till it is impregnated or till it dies or is discharged.

With such views it is easy to understand the cause of tubal pregnancy, for we have only to turn to the papers of Arthur Johnstone and Bland Sutton to see that desquamative salpingitis could at once put the mucous lining of the tube into a condition exactly similar to that of the uterus, and in that condition access of spermatozoa would be possible, retardation of the ovum in the tube would be inevitable, and its immediate adhesion to the tube-wall after impregnation would be as easy and as likely as its occurrence in the uterus. The cause, therefore, of ectopic gestation or tubal pregnancy will be any process or accident which has reduced the Fallopian tube, so far as concerns its internal lining surface, to the same condition as the uterus.

Virchow long ago drew attention to the fact that at post-mortem examination of cases of ectopic gestation ending fatally at the period of primary rupture, traces of previous pelvic peritonitis were often found; and nothing is more common than to find a record of such attacks in the history of cases that come under clinical investigation. Indeed, there is one fact about these cases which is very notable in the relation: that a very large proportion of them have a history of prolonged sterility and menstrual suffering, showing that their procreative machinery was out of gear. Thus we often have the history common to tubal mischief that after a first labour there was an illness with marked symptoms of pelvic trouble, then a long period of sterility, then the ectopic gestation ending in rupture. In my clinical records of

such cases I have laid special stress on this feature of their history as a guide to diagnosis. Parry impresses this by saying that "women who have become pregnant with a child outside the uterine cavity frequently show a previous inaptitude for conception. The interval between marriage and the first impregnation is frequently long. If the woman has borne children a period of sterility frequently precedes the extra-uterine pregnancy;" and he gives a long list of authorities from whom he elicits confirmatory statements. This is eminently suggestive of the view I have advanced, that ectopic gestation is caused by destruction of the proper ciliated epithelium of the tubes; and there are many other points to be successively discussed, which all point in the same direction. Indeed there is no argument against this save the belief that impregnation takes place usually in the tube. For this belief there is no foundation in fact—nothing at all except the misinterpreted facts obtained by experiment in the lower mammals. In these, spermatozoa have been found high up in the cornua of the bipartite uteri, and these cornua have been erroneously supposed to be Fallopian tubes, whilst they are nothing of the kind. The Fallopian tubes do not really exist save in the higher order of animals who have assumed the upright position. If we accept this view the physiology of the process of reproduction is immensely simplified and the pathology of ectopic gestation becomes intelligible. I cannot see that any other views than these are consistent with the recent discovery of Arthur Johnstone and Bland Sutton, nor indeed can any others be reconciled with the facts of ectopic gestation as unravelled by modern surgery.

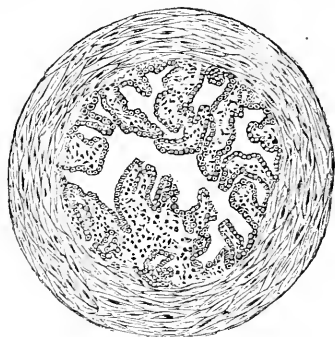


FIG. 55.—Section of normal Fallopian tube (after Bland Sutton).

We have now to deal with the varieties of ectopic gestation, and I propose at once to dismiss all previous classifications as inconsistent with the facts as they have occurred in my own experience, and incompatible alike with the view of the explanation of the cause of ectopic gestation which I have offered and with the physiology of impregnation. The uterus being regarded as the

only site possible for normal pregnancy, and the tract through which the ovum passes and in which it may be impregnated in the abnormal process, it follows as a matter of course that all ectopic gestations must, in their origin, be tubal. A possible exception to this may be the impregnation of an ovum in its vesicle before it leaves the ovary—a matter I shall discuss immediately.

A clinical distinction of two kinds of tubal pregnancy must be made, though pathologically they must be regarded as quite similar. This division occurs between the cases in which the fertilised ovum becomes attached to the inner wall of the tube where it is free from uterine tissue, and those cases where the ovum cavity is formed by the distension of the tube at that part imbedded in the structure of the uterine wall. These cases have been called "interstitial," and I propose to retain this term.

The process of development of an ovum in the tube, at any part of it, inevitably results in rupture of the tube. In the "interstitial" cases, the rupture, so far as is known, always takes place into the peritoneal cavity, and I cannot imagine any other way in which it might go, though we have assertions that a diagnosis has been made of tubal pregnancy which has ended by the ovum being discharged through the uterus. Such cases are easily dismissed from serious discussion, for I have never seen a preparation of interstitial pregnancy which could, by any possibility, have been diagnosed from normal pregnancy before the period of rupture. It is easier to believe, therefore, that such cases as I speak of have been errors of diagnosis than that the uterine tissue has been ruptured and the pregnancy has become intra-uterine. And here let me state that about this subject, as indeed about nearly everything else in this book, I do not give as a fact anything which has not been verified, either by post-mortem or ante-mortem examination. Any man who gives an opinion that he diagnosed a tubal pregnancy, or any other lesion, and that its course was this, that, or the other, merely upon the unaided discrimination of symptoms or the dim light of a pelvic examination, I regard with so much suspicion that I do not accept his evidence for argument save under exceptional circumstances. Post-mortem records, museum specimens, and the facts observed at operations yield evidence which is usually incontrovertible, and such as these only do I care to use. The interstitial ectopic gestation ruptures uniformly, as I have said, and, so far as we know, into the peritoneal cavity. The period of its rupture seems to be variable from three to twenty weeks, a fact which I derive from post-mortem record and museum specimens solely, for I have had no operative experience of this disaster, and have had only one case within my own associations.

Ectopic gestation in the free portion of the tube infallibly involves rupture at some part of its progress before the fourteenth

week—in fact, I think I might say the twelfth week, for out of an enormous number of specimens I have examined I have entirely failed to satisfy myself that rupture had been delayed later than the twelfth week, and I have seen it as early as the fourth week of gestation. This rupture I propose to term “primary rupture,” and it constitutes, in one direction, the most disastrous accident known amongst women.

This tubal rupture takes two directions—(a) into the peritoneum, which is the fatal form; and (b) into the cavity of the broad ligament, a form which yields the variety of ectopic gestation which I propose to call extra-peritoneal, which was called the “sous-peritoneo pelvienne” variety by Dezeimeris, and which alone yields all the cases which go on to the period of viability, all the lithopædia, all the suppurating cysts discharging into bladder, rectum, &c., and also the cases which by secondary rupture of the ovum cyst get called “abdominal pregnancy.”

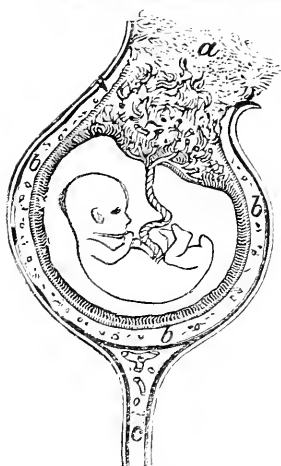


FIG. 56.

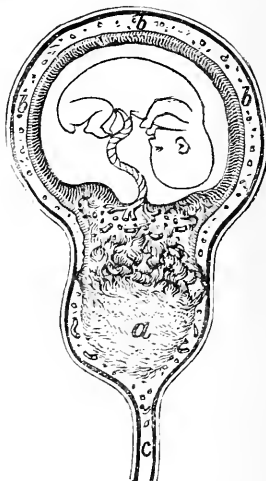


FIG. 57.

FIGS. 56 and 57.—Diagrammatic section of Fallopian tube representing the two directions of rupture—2, into the peritoneal cavity; 3, into cavity of broad ligament; a, clot at point of rupture; b, wall of Fallopian tube; c, cavity of broad ligament with 3) folds separated by hæmic effusion, a.

This is the view of ectopic gestations I first propounded in 1873, and Parry commended it, with the expression that it at least had the merit of simplicity. I have, during the fifteen years which have elapsed, missed no possible opportunity of examining preparations of ectopic gestations, and nearly a hundred cases have passed under my own observation, directly or indirectly, for post-mortem investigation or surgical interference, and I have not found a single fact inconsistent with the views just briefly announced, and now to be discussed at length. On the contrary,

these views of ectopic gestation bring harmony where formerly all was discord, make orderly what has hitherto been nothing but confusion. We may, therefore, construct a genealogical table of Ectopic Gestation, which gives the history at a glance as follows:—

SCHEME OF ECTOPIC GESTATIONS (in tubo-ovarian tract).

I.—Ovarian, possible but not yet proved.

II.—Tubal, in free part of tube, is (*a*) contained in tube up to fourteenth week, at or before which time primary rupture occurs, and then progress of the gestation is directed into

(*b*) Abdominal or intra-peritoneal gestation, uniformly fatal (unless removed by abdominal section), primarily by hæmorrhage, secondarily by suppuration of the sac and peritonitis;

(*c*) Broad ligament or extra-peritoneal gestation;

(*d*) may develop in broad ligament to full time, and be removed at viable period as living child;

(*e*) may die and be absorbed as extra-peritoneal hæmatocele;

(*f*) may die, and suppurating ovum may be discharged at or near umbilicus, or through bladder, vagina, or intestinal tract

(*g*) may remain quiescent as lithopedion;

(*h*) may become abdominal or intra-peritoneal gestation by secondary rupture.

III.—Tubo-uterine or interstitial is contained in part of tube embraced by uterine tissue, and, so far as is known, is uniformly fatal by primary intra-peritoneal rupture (as *b*, before fifth month.

A few cases of pregnancy in hernial sacs have been unearthed by Campbell and Parry, but these, so far as can be judged by the somewhat meagre details and unsatisfactory accounts of most of them, can hardly be regarded as instances of ectopic gestations. They are rather instances of a hernial uterus in which impregnation has been accomplished.

The first division of our subject in natural order is the much-discussed "ovarian" gestation. Concerning this I may well quote a sentence from Parry, for though it is not directly applied to this point it most truly may be: "Special treatises on obstetrics, as well as periodical medical literature, teem with statements which are utterly unreliable, and which are calculated to mislead investigators of this subject."

The beliefs prevalent on the subject of impregnation naturally enough have always influenced the theories of writers on ectopic gestations—it is so now in my own instance—and therefore we find writers of the time of Haller believing that ovulation was excited by coitus, expressing many strange notions about abnormal pregnancies. The belief that the spermatozoa reached the ovum

in the ovary, and that impregnation was effected there, brought about the notion, at the end of last century and the beginning of this, that most ectopic pregnancies were ovarian. Hausman made a series of observations which were regarded as final, and therefore the belief not only became universal but it infects our text-books to this day; for authors of text-books copy one another with scrupulous fidelity and unblushing absence of acknowledgment. But if Hausman's observations on animals are carefully perused—and of course no writer of a text-book would ever think of going to the original authority for information—it will be found that the observations on different animals give results so inconsistent with one another that it becomes absolute simplicity of intellect to attempt to apply them to the human being. Finally, Sir Everard Home published a paper in the *Transactions of the Royal Society* (before his audacious inventions were made manifest), and the belief in ovarian pregnancy became a creed, and it remained so till Velpeau raised the cry of unbelief. Even Campbell (1842) says that he believes cases of ovarian pregnancy are not so rare as his predecessors had asserted. Yet he quotes Velpeau as having examined four such cases, aided by two competent assessors, and as having easily determined that the ovary was not involved in three of them; “but in the fourth they experienced not a little difficulty in determining the product of conception, *which did not exceed in size that of a flea*, to be placed, not in the substance, but in the cyst between the peritoneal and proper tunic of the ovary.” At another place (p. 29) he describes the occluded and distended tubes of a prostitute, from one of which a white oval body the size of a garden pea with some white viscid matter (doubtless an old pyosalpinx) was forced out by pressure, as an ovarian pregnancy. Again he quotes the dissection of a child aged thirteen, a confirmed masturbator, in whom was a dermoid cyst of the left ovary, as confirmation of his view. So credulous is Campbell that on a point like this his book is absolutely foolish. He has, however, discovered a number of descriptions which might be accepted as authentic but from their extreme antiquity (1682, 1697, 1735, and 1767). Unfortunately the preparations of none of these cases can be traced; even the instance said to be visible in the museum at Wurzburg seems to have disappeared, and certainly in modern times there has not been exhibited any preparation which can bear the test of critical investigation.

Of course it is impossible to admit any case as one of ovarian pregnancy in which no post-mortem examination had been made; indeed, even when such an examination is made, it would have to be at the hands of a competent observer only that an assertion of an ovarian pregnancy could be accepted. The uterus and both tubes would have to be recorded as intact, and we should have one ovary present and the other not to be accounted for save by

its existence on the cyst of the ovum; and in the cyst wall of such a case microscopic evidence of the presence of the ovarian tissues would be required.

In several cases of tubal pregnancy which I have dissected it was a matter of the utmost difficulty to find the corresponding ovary, even when it was perfectly clear that the seat of the pregnancy was one of the Fallopian tubes. In one of my dissections I could not find the ovary, and yet that case was, with perfect certainty, one of tubal pregnancy. In Spiegelberg's paper there is only one case cited to which these tests apply with any degree of satisfaction, and therefore I give the details in full.

An abdominal section was performed under circumstances of great difficulty, and after peritonitis had been some time in existence, the sac had become closely adherent to the great intestine and to the right wall of the pelvis. On both sides the tubes were normally distributed, but the left one, after a course of 7 ctm., disappeared on the walls of its broad ligament. The right tube extended 10 ctm. along the upper edge of the thickened broad ligament toward a sac which was united by the *ligamentum ovarii* to the *ala vesperilionis* of the uterus; it had a diameter of 10 ctm. and was in a collapsed condition. After the tube had reached the sac it could be traced along its surface for a distance of 22 ctm. and was permeable for a distance of 12 ctm., and in the remaining 10 ctm. of its length it disappeared as a narrow, smooth band on the outer surface of the sac. There was in this neighbourhood a small dermoid cyst in the wall of the sac without any distinct boundary. The sac itself had two layers, the outer of which was thick and firm, and the inner one fine and delicate, these two being capable of separation. The inner layer was clearly the chorion, for over its greater part it had the structure of placenta, which was thickest at the bottom of the sac and thin at the upper part.

Spiegelberg therefore concludes that the right ovary was the bag containing the child. He could find no ovary on the right side, but he found distinct ovarian elements in the outer wall of the sac. It must be pointed out that, in the first place, the post-mortem examination is admitted to have been not very efficiently performed, and the description given of the tube makes it, I think, quite as likely that it was a case of pregnancy in the broad ligament which resulted from the rupture of the tube on its lower aspect—that being the most common variety of the tubal pregnancies which are not fatal in their early rupture—as that it was a case of ovarian pregnancy. The fact that there was present an ovarian tumour is proved by the existence of a dermoid cyst. This would account for the somewhat wide distribution of ovarian elements in the wall of the sac, and as Spiegelberg does not claim to have found ovarian elements all over the wall of the sac, I think

we may be quite justified in being somewhat sceptical even about this case; though I frankly admit that the eminence of the observer and the manifest care with which all his records are given make it quite possible that his conclusions are correct.

In a paper published by M. Puech upon this subject he describes a case in which the left Fallopian tube, like the right, was fixed behind the ovary by adhesion, but had remained permeable. Its pavilion was closed in a great measure, but not completely, and admitted a probe. The left ovary measured 46 mms. long, 26 mms. broad, and 18 mms. thick. It contained Graafian follicles of various degrees of development, the largest being 8 mms. in diameter. On its outer extremity was a rounded body about the size of a large cherry, its largest diameter being 20 mms., while its smallest was 12 mms. Its envelope was transparent, and furnished with well-marked reticulated vessels. At one spot a deep violet colouration was seen over a space about the size of a lentil, and around this the envelope was thickened. Over most of the rest of the surface a yellowish substance could be seen through the translucent envelope. On opening the cyst with scissors a prominence with a villous surface was found attached at the area of colouration, while over the rest of the surface a layer $\frac{1}{2}$ mm. thick could be easily separated from the cyst wall. The villous prominence was furnished with large vessels, and formed a semi-ellipsoid measuring 11 mms. by 10 mms. On incising this with cataract scissors it was found to contain a cavity distended by a clear fluid, and in the fluid floated an embryo in the form of a vermiform body 1 mm. long, curved in the middle and swollen at one extremity. It was enveloped in an excessively delicate membrane, by which it was fixed to the presumed chorion.

Of course the whole conclusion in this case depends upon the assumption that this vermiform body, only 1 mm. long, was an embryo. It may have been one, but certainly there is no proof advanced in favour of this view; and although I am by no means prepared to deny its accuracy, I am certainly very doubtful about it. If it was an embryo it could only have been one of a few hours' existence, and one could hardly expect to find the machinery of the whole process so defective that the pavilion of the tube—the most important part of the whole machinery—was so damaged as to be, according to M. Puech's description, almost closed and fixed behind the ovary by adhesion. One would have at least expected this adhesion to have been over the seat of the rupture, and yet it is distinctly stated not to have been so. I have seen so many queer-looking things in ovarian cysts and follicles that I am not inclined to admit that this vermiform body has been shown conclusively to have been an embryo.

A very important paper was published in 1859 by Professor Arthur Willigh (*Vierteljahrbuch. für Pract. Heilkunde*) in which

the author suggests that critical investigation by means of the microscope is necessary to determine the reality of the so-called ovarian gestation. By this test he dismisses absolutely the evidence of a number of preparations which had been labelled in various museums as ovarian pregnancy, even one to which there was attached the great authority of the name of Kiwisch.

Such a test is wanted, for instance, in the case narrated by Dr. Walter, of Dorpat (*Monatschr. für Geburtsh.*, Ap. 1862). There the account is given merely to the effect that the right ovary had become developed into a long tumour, its long axis being in the same direction as the body of the full-grown child, and that no other trace of the right ovary could be discovered; but some evidence is needed more than is given that this tumour possessed ovarian structure. We know perfectly well that an ovary can be enlarged by cystic growth indefinitely, but we can always identify by microscopic investigation the origin of the growth.

Walter's specimen is still in the Dorpat Museum, and I would suggest a careful investigation of it.

A large number of cases have been published in modern times with the title of ovarian pregnancy, and placed before us in the most reckless fashion.* No less an authority than Hildebrandt, of Berlin, published a case as one of ovarian pregnancy in 1864, where a lot of old foetal debris was discharged by the rectum and the patient recovered, not a scrap of evidence being given, or being suggested, as to where the pregnancy was, though the very fact that it was discharged by the rectum is conclusive that it rested in the broad ligament and originated as a pregnancy in the free part of the tube, and that it ruptured and passed into the extra-peritoneal variety. Another case to which the same criticism applies has much stress laid upon it by Dr. Parry on account of a post-mortem record which is perfectly satisfactory, except that there is no proof that a substance the "size of a honey-bee which was found to escape on making the incision into the ovary, which was enlarged to the size of a very small hen's egg," was in reality a foetus of the sixth or seventh week, as Dr. Parry believed. In fact, it is an endless task to go over the numerous recorded cases of this kind. Not one of them has been subjected to the necessary condition of criticism, a satisfactory compliance with which alone can establish the occurrence of ovarian pregnancy.

Parry (p. 38) says, "Whatever doubts had previously existed, they were settled by Granville's description of an example of this form of aberrant gestation." But when the original description and figure are turned up it is found that Granville figures only a small cystic ovary with a gelatinous lining to the cyst, a very frequent object. There is no foetus, not the faintest resemblance

* The most absurd of these is in the last volume of the "*American Gynecological Transactions*," where a boiled and pickled dermoid tumour is described as an ovarian pregnancy!!

of one ; but Sir Charles Clarke assured him that at one time there was an embryo hanging pendulous from the yet visible rudiment of an umbilical cord. In fact, Granville's case is of no more value than any of the others.

Parry sums up the subject by saying that the weight of authority is in favour of the possibility of ovarian pregnancy. Its possibility I admit, because I can easily imagine a Fallopian tube glued on to the ovary, and deprived of its lining epithelium, permitting the contact of the spermatozoa with a follicle burst within the area (of the ovary) of adhesion. Then the spermatozoa might infect the ovum before it escaped from the follicle, the ovum might adhere to the follicular wall and then develop. But there are so many contingencies in such a case that the doctrine of chances make it so remote that its occurrence may be regarded as likely as the birth of a blue lion or a swan with two necks, like a heraldic monstrosity—a mere pathological curiosity. Finally, it would have no kind of clinical interest or importance not already decided upon in the case of pregnancies in the free part of the tube, so that we may avoid any further discussion of ovarian pregnancy as futile. If it does occur it must be rare and will be curious. If it never occurs so much the better.

I do not propose to discuss further the varieties of ectopic gestation which have been proposed by previous writers, for in doing so I should merely introduce elements of confusion which I am anxious to avoid. I shall merely say, therefore, that my second variety, the tubal pregnancy, arises from the attachment of the fertilised ovum to any part of the lining membrane of the tube, from the pavilion onwards. There can be no doubt that the pavilion may itself become the seat of the gestation, and I am free to accept a sub-variety of the ovario-tubal as a possibility. It would occur amongst these numerous cases when the pavilion has become agglutinated to the surface of the ovary and has communicated, by the bursting of a follicle under it, with the substance of the ovary itself. Tubo-ovarian cysts form in this way, and I have seen a large number of them. I have never seen anything like a pregnancy of this kind, however, and therefore, whilst I admit the possibility of its occurrence, I can say nothing about it. It must be clearly understood that such a variety, if accepted, would be different from the alleged ovarian form, for in this the condition would be that the ovum was developed in the ovary with the tube free and not attached to the ovary. That a fertilised ovum may drop into the cavity of the peritoneum and become developed there is a contingency I cannot accept for a moment, for the powers of digestion of the peritoneum are so extraordinary that an ovum, even if fertilised, could have no chance of development. What have been called abdominal pregnancies are clearly exceptional cases, where primary

tubal rupture at the end of the third month has not proved fatal, where the extruded placenta has made for itself visceral attachments wherever it has touched, or where secondary rupture of a broad ligament cyst has converted an extra-peritoneal ectopic gestation into one within the peritoneal cavity. That the first of these processes is by far the most common condition has been proved to me beyond doubt in my operations, for I have seen the ruptured tube within a few days of the catastrophe containing the great bulk of the placenta, whilst the villi of the extruded portion has been engaged in making epiphytic inroads on intestine, bladder, the back of the uterus and the folds of the omentum. I have pulled these villi out of the living crypts they have made, much as one pulls a barnacle out of its bed, leaving bleeding holes behind them. But Berry Hart has proved this beyond dispute, for he has been able to inject the placenta which had come out of its ruptured tube and acquired these strange and unusual associations, and I here give a drawing of one of the preparations showing the process.

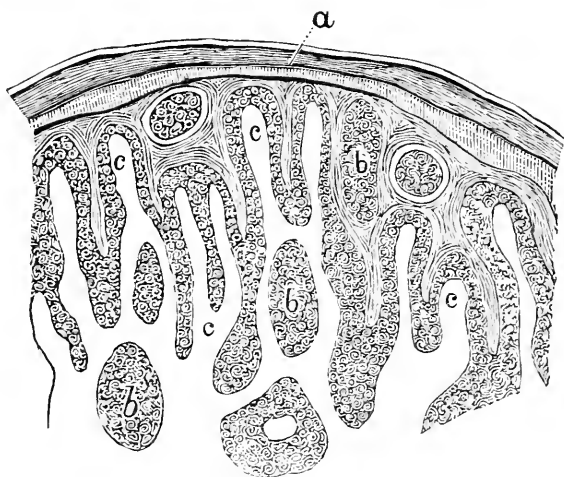


FIG. 58.—Actual view of placental villi (c) encroaching upon and causing thinning of the muscular wall (a) of the Fallopian tube; b, maternal blood sinuses. Drawn by E. Teichmann from section made by Berry Hart.

From the relations of the outer extremity of the tube I should suppose that a tubo-ovarian pregnancy, or one in the pavilion, must of necessity always end by rupture into the peritoneal cavity, and I think it would do so within the period which limits the existence of the purely tubal ectopic gestations—that is, thirteen or fourteen weeks. Clinically, therefore, there would be no advantage in multiplying by further sub-divisions the varieties of tubal gestations. Whatever difference of opinion on these matters there may be, there can be but a uniform consensus

of belief to this effect: that by far the greater number of cases of ectopic gestations are tubal. I believe that they are really all tubal, and in this consists the novelty of my views on the subject. I do not see any difficulty in believing even that a pregnancy originally tubal may be completely extruded from the tube, that the tube may contract and heal, and that a secondary and wholly intra-peritoneal gestation may thus be formed (Dezeimeris) as in the remarkable case recorded by Maticcki (*Monats. für Geburtshülfe, Mai, 1860*), where the uterus and its appendages could all be traced, and where the attachment of the placenta had become almost wholly omental. Having seen all stages of such a process as this would require, I am sure that this is possible, and the very rarity of the observation, unique so far as I know, proves how exceptional the completion of such a process must be, as we would naturally expect it would be. There is indeed nothing more remarkable about it than the well-established fact that by axial rotation an ovarian tumour may be twisted off its pedicle and grow entirely from the omentum, or, as I have seen, from the ascending colon. Similarly I have seen this strange transplantation in all its phases and in all stages of the process. That such a hypothesis is tenable is shown by the actual fact recorded by Lecluyse (*Bulletin d l' Academie de Belgique, 1869*), that an intra-uterine gestation became ventral by the ovum escaping through an aperture left in the uterus by the defective healing of the wound of a previous Cæsarean section. The placenta became attached chiefly to the small intestines, and the history does not give any clue to a sudden rupture. I think it far more consistent with the facts given, that the fistulous opening was gradually dilated during the early weeks of pregnancy, before the differentiation of the placenta as a cake, and that the ovum was gradually passed through the opening, the placenta making epiphytic inroads on whatever it came in contact with.

Concerning the statistics of ectopic gestation, Parry very well says that, with our present facilities for arriving at the truth in regard to the location of the ovum, it is believed that "we are not warranted, excepting in rare instances, in asserting that the ovum is developed in any particular portion of the genital canal unless we have the opportunity of making a post-mortem examination." With this I entirely agree, and can only qualify his remarks by adding that we can accurately state the position of the ectopic gestation when we remove the parts by abdominal section to avert the need of post-mortem examination. I have now been concerned directly, and indirectly, in the post-mortem, examinations of twenty-six women who have died from hæmorrhage into the peritoneum (intra-peritoneal hæmatocele) from ruptured ectopic gestation. I have had to operate forty times for the same

cause, and I have witnessed about ten similar operations by other surgeons, making in all the unique experience of seventy-six cases. In every one of these the seat of the pregnancy was ascertained to be without doubt the Fallopian tube, and in only one was the seat of pregnancy in that part of the tube embraced by the uterine tissue. Interstitial ectopic pregnancy must therefore be very rare, and that form which occupies the free part of the tube must have an over-whelming preponderance; and the other alleged forms I have yet to see. All the cases which have occurred in my experience in which the gestation has gone beyond the period of primary rupture have been in the cavity of the broad ligament, where they were lodged by that rupture. These facts are so inconsistent with the laboriously (and I think uselessly) collected statistics of Parry that further research must be made before any conclusions are accepted. I do not see how Parry's statistics can be of any value for any purpose whatever, collected as they are for the most part from imperfect records made by men who were unskilled in pathological research.

Parry says, "It is very rarely indeed that an opportunity is obtained to examine an unruptured cyst in the early stages of its development." I doubt very much if such a case has ever occurred. Certainly the instances he quotes will not bear critical investigation. Indeed, the best of the lot (Stanley's case) is clearly not accepted by Parry, for he emphasises the fact that *no embryo was found*. I am of opinion that no authentic description exists of an unruptured tube-pregnancy. Of the frequency of ruptured tubal gestations we require no more proof than the current literature of our profession, which abounds with instances; and there are few men of experience in general practice who cannot call to mind one or more examples of this ghastly catastrophe. Parry says, that "the almost universal opinion of the profession is that this accident is uniformly fatal, and, if not so, that we have no reliable means of combating its dangers." Much discussion has taken place of late years as to the possibility of diagnosing tubal pregnancy before the period of rupture, and many strangely dogmatic assertions have been made to the effect that such cases have been diagnosed and successfully treated. I am bound to say that I am exceedingly sceptical concerning the correctness of these statements, and one fact alone would justify my attitude. It is this: that of all the cases that I have operated on, and in many where I have seen the post-mortem examination and have known the history, the patients have made no complaints till the alarming symptoms of rupture have set in. I have only seen one case before the period of rupture, and there I diagnosed tubal occlusion and distension easily enough; but the question of the woman being pregnant never entered the mind of anyone who saw her, and for reasons which will be plain when the story is

read. See "*The British Gynaecological Journal*," Part XIII. p. 38, from which the following is an extract:—

"The woman came to me a few weeks ago in the ordinary course of out-patient practice, with symptoms of obscure pelvic pain *of several months' standing*—in short, with the usual symptoms of tubal disease. She was examined, and I came to the conclusion that it was a case of gonorrhœal salpingitis, and so clear were the symptoms that I used the case to demonstrate to my pupil, Dr. Ricketts, the nature of the symptoms in that disease. That was on a Monday. On the Thursday she turned up again with the most acute symptoms—she was bent double and could hardly walk. Finding that the whole floor the pelvis was fixed in one mass she was at once admitted. The next morning I opened the abdomen and found a ruptured tubal pregnancy, than which nothing was less suspected. I defy anybody to have diagnosed such a case before-hand, for the woman had not even missed a period."

The fact is that the notions of Antoine Petit of 1710 still permeate the professional mind, and in spite of all that can be said they are handed down from text-book to text-book with unfailing regularity and uniform inaccuracy. Of these misleading statements Parry said, "Could they be verified the detection of extra-uterine gestation would be an easy task; but, unfortunately for the comfort of the obstetric surgeon, scarcely one of them contains a grain of truth; yet, strange to say, the opinions of Petit influenced and impeded the progress of our knowledge on this subject for more than half a century." Parry might have said for a century and three-quarters.

The curious thing is that the great bulk of my patients had no suspicion that they were pregnant at all, and therefore the first factor in a correct diagnosis was absent. Even when this leading point is present there is generally nothing unusual about the sensations of the patient till the period of danger. As Parry well says, "The patient in the first instance supposes herself to be pregnant, and during the first four or five or eight weeks nothing particular occurs to warn her of her anomalous condition. The usual signs of this early period of gestation appear successively; or, indeed, she may enjoy better health than she did during the same period of previous pregnancies, when suddenly and without any warning the unfortunate victim of this terrible accident is seized with very characteristic symptoms."

But the very fact to which I have drawn attention, that a very large proportion of these victims, a large majority in my own experience, are women who either have never been mothers or who have not been pregnant for many years, shows how misleading the whole history may be. The last thing these women would admit would be pregnancy.

I must point out here that Petit is right on one point to a very large extent, though by no means uniformly, when he says that "the menses, contrary to what is seen in normal gestation, continue to appear, but in smaller quantities throughout the pregnancy." Menstruation is sometimes suspended absolutely, as in normal pregnancy, but more usually it occurs irregularly and profusely; so that here again we are misled. In fact, the history of these cases is more usually a source of danger than a help to the diagnosis, and unless some exceptional incident occurs, or unless the patient is a good deal more anxious about the state of her pelvis and a good deal less reluctant to have it examined into than Englishwomen are as a rule, no diagnosis is possible before the period of rupture, for the patients make no demand upon us. Amongst the women of other countries it may be different. I cannot improve on the words of Parry in continuing this vexed question of early diagnosis of tubal pregnancy, and therefore I quote further: "An extra-uterine gestation is frequently ushered in quietly enough, and during the first four or six weeks all may go well, but after this time symptoms supervene which in their violence are as unlike the signs of uterine pregnancy as the surface of a stormy sea is unlike that of a dead calm. The one moves on with some sort of regularity, the discomforts of the condition appearing in a certain order, but the other follows no plan and sets all order at defiance." This is the period of rupture; which is (in my own experience) limited between the fourth and the twelfth week of pregnancy. I possess, and have frequently exhibited, a preparation of a ruptured tubal pregnancy which proved fatal in a woman aged thirty-one, after an illness of only seven and half hours. She was under the care of Dr. Guthrie Rankin, of Warwick, and Dr. Thursfield, of Leamington, and the following is the history of the case:—"On November 2nd, 1887, at 1.30 p.m., Mrs. ——— was seized with pain in the abdomen, followed by vomiting and faintness. Dr. Guthrie Rankin was called in, the pain was relieved by an opiate; but collapse followed, and death ensued at 9 o'clock the same evening. She was seen in consultation by Dr. Thursfield just before death. She was the mother of three children, suckling the youngest, aged seven months, of good constitution, with no history of previous illness. At the post-mortem examination the abdomen was found full of clots, estimated at from seventy to eighty ounces. The left Fallopian tube presented an ovoid swelling, which had ruptured, and was full of blood-clot; on examination this swelling proved to be a tubal pregnancy."

One curious point about the preparation is that the ruptured ovum in the tube, as it is seen in the preparation bottle, looks exactly like the ovary, and every one who sees it at once says—"Case of ruptured ovarian pregnancy." But a little more careful

examination displays the ovary uninjured, and the further fact that what is taken at first to be the ovary really is an ovum in the Fallopian tube of certainly not more than five weeks. The rupture which caused death was not larger than a pea. I mention these facts to show how carefully records of these cases must be made.

On the other hand, I have seen no case of ruptured tubal pregnancy (primary rupture), either in my own practice or in museums, in which there was evidence to show that it was over the twelfth week. Of course I am not talking of cases where the pregnancy had gone on in the broad ligament after primary rupture into that cavity, but purely of those of fatal primary rupture requiring operation for the arrest of hæmorrhage.

The cause of the primary rupture of the tube is chiefly in its thinning at the site of the placenta. When distended either by pregnancy or otherwise, the walls of the tube never thicken materially. Certainly in tubal pregnancy there is no imitation of the thickening of the muscular coats of the uterus. The villi of the placenta permeate the walls, seem even completely to penetrate them, and the blood-vessels increase enormously in size, especially the veins. Some slight exertion occurs, such as stooping at some household work, a violent attack of pain comes on, the patient becomes faint, collapsed, cold, pulseless, and anæmic, and dies almost uniformly if unaided. This is the story of a great number of these cases, for in quite a number of cases in which I have seen post-mortem examinations the women have been found dead or dying, and suspicions of foul play have not unfrequently been aroused. Sometimes the symptoms abate, the patient recovers for a few days, and even gets about; then a recurrence of the peritoneal hæmorrhage occasions a revival of the serious symptoms, and this may be repeated at intervals several times before the fatal issue is arrived at. A most notable example it was of this which drove me to attempt to save these cases by prompt surgical interference; it was indeed an epoch-making case, for it has revolutionised our practice in these cases.

In the summer of 1881 I was asked by Mr. Hallwright to see with him, in consultation, a patient who had arrived by train from London in a condition of serious illness, that illness having been diagnosed by Mr. Hallwright as probably hæmorrhage into the peritoneal cavity from a ruptured tubal pregnancy. The patient was blanched and collapsed, the uterus was fixed by a doughy mass in the pelvis, and there was clearly a considerable amount of effusion in the peritoneum, but no distinct tumour could be felt above, and I agreed with Mr. Hallwright as to the nature of the lesion. This gentleman made the bold suggestion that I should open the abdomen and remove the ruptured tube. The suggestion staggered me, and I am ashamed to have to say I did not receive

it favourably. I saw the patient again, in consultation with Mr. Hallwright and Dr. James Johnson, and again I declined to act upon Mr. Hallwright's request, and a further hæmorrhage killed the patient. A post-mortem examination revealed the perfect accuracy of the diagnosis. I carefully injected the specimen which was removed, and I found that if I had tied the broad ligament and removed the ruptured tube I should have completely arrested the hæmorrhage, and I now believe that had I done this the patient's life would have been saved. The appearances in this case are precisely given in the annexed illustrations from Duguet:—

FATAL CASE OF FALLOPIAN PREGNANCY AT EIGHTH WEEK (AFTER DUGUET).

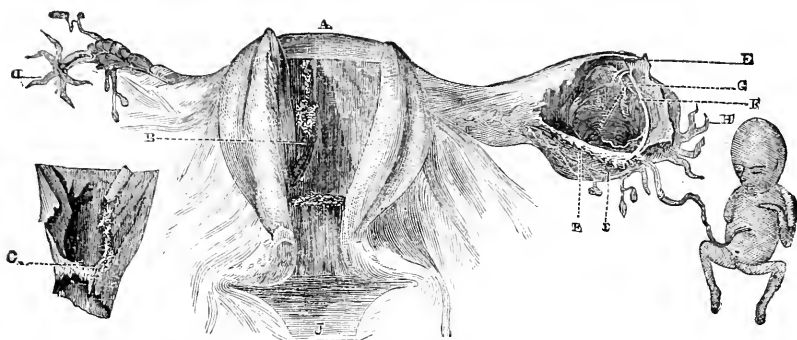


FIG. 59.—A, Uterus laid open on the anterior surface; B, part of the decidua still adherent to the right uterine cornu; C, decidua, nearly entire, expelled before death; D, right tube and ovary, normal; E, E, margins of artificial opening in the left tube; F, umbilical cord; G, placenta; H, pavilion of the left tube; I, vascular plexus, ramifying over the tubal covering of cyst, from which the hæmorrhage occurs on its rupture; J, vagina.

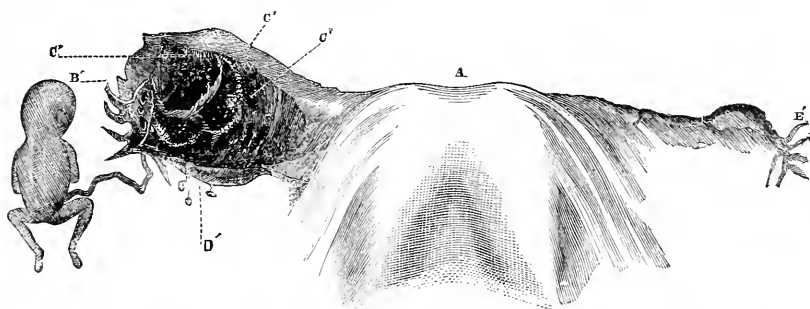


FIG. 60.—A, View of the posterior surface of the uterus; B, fimbriae of left tube; C, C, C, rents in tubal covering of cyst, corresponding to site of placenta, from which the foetus escaped and hæmorrhage came; D, ovary attached to lower surface of cyst, and increased in size; E, right tube.

A most striking contrast to this terrible incident will be found in the following case, when, thanks to the ability and firmness of Dr. Dolan, of Halifax, I was able to save a valuable life:—

Late on the evening of February 16th I received a telegram

from Dr. Dolan, of Halifax, to proceed at once to that town to operate upon a case which he believed to be one of ruptured tubal pregnancy. The following is the account which Dr. Dolan has given me:—"P. W., aged twenty-nine, married, four children living, youngest two years old, had a miscarriage nine months ago, has always been regular but missed the last period. Felt uneasy for the last few weeks; felt, she said, as if there was a weight and as if the womb were coming down the passage; enjoyed good health up to this time. About 9.30 a.m., February 11th, I was called to see her and found her in a state of collapse. She revived, and then complained of pain in her abdomen. Symptoms like those of colic, vomiting, abdomen distended, great deal of flatus. This continued for some hours; was relieved by ether and champagne. She had several attacks during the day, and I saw her altogether seven times. At 10 p.m. same night she begged for something to give her sleep, and I gave her a dose of chloral, bromide of potash, and camphor water. She slept the whole night. A nurse had been obtained immediately after the first attack. On the morning of February 12th she was, to all appearances, perfectly well, was free from pain, and, as she said, she felt as if there was nothing the matter with her. There was, however, a good deal of flatus, and the abdomen was distended. She told me she had gone to bed on the Tuesday night perfectly well, but on rising in the morning about 7 a.m. she felt a sudden pain about the umbilicus. When she got up she tried to work it off. I told her husband I feared there was some internal hæmorrhage caused by rupture of tube, but as she was so much better I would wait and see whether I was right. She was kept in bed in charge of the nurse, and not allowed to move. This treatment was continued until the following Thursday. There was no return of pain or collapse, and she said she did not know why she was kept in bed. At midnight I was hurriedly summoned to see her. She had been out of bed for a short time, and almost the same symptoms came on—sickness, tendency to faint, cold sweats, with a sense of fulness in the abdomen. Her appearance was changed, face was blanched, the abdomen was distended, but there was no localised swelling. By resting she again revived. I told her husband that I was now certain as to what she was suffering from, and an operation would be required. He gave me permission to call in Mr. Lawson Tait, whom I telegraphed for as soon as I could." On my arrival I completely agreed with Dr. Dolan's diagnosis, and I opened the abdomen without further delay and removed an enormous quantity of clots and bloody serum and debris. The tubal pregnancy was on the left side. I tied the broad ligament, removed the pregnancy, washed her out thoroughly, and put in a drainage-tube. Dr. Dolan stayed with her all night, feeding her from time to time with diluted champagne. She gradually rallied; there was but a slight discharge

from the tube, very little pain, the pulse came down day by day, and on February 25th she was regarded as convalescent, and is now in a condition of perfect health.

What a contrast lies in such a pair of cases! And to make the lesson still more emphatic let me make a long quotation again from Parry's book (p. 211-13). "In speaking of the result of this pitiless termination of extra-uterine gestation, it was stated that so few recovered from it that all hope of such a happy result is to be dismissed in considering the treatment. No doubt, notwithstanding the statement of Rogers to the contrary, a few women have recovered, though the number is very small—so small that when one is called to a case of the kind it is his duty to look upon his unhappy patient as inevitably doomed to die, unless he can by some active measures wrest her from the grave already yawning before her.

"A bleeding vessel, through which the red stream of life is rushing away, can be ligatured. A gangrenous limb, which is destroying the possessor by sending its poisonous emanations to the remotest regions of the body, can be amputated. A cancerous breast, which is sapping the vitality of its victim hour by hour, can be removed with the prospect of temporary relief. An aneurism that places life in constant jeopardy can often be cured by proximal or distal ligation. The tumultuous action of the heart organically diseased may be quieted till nature restores the balance, after which the person may enjoy a long and even a useful life. Even phthisis now counts its many cures. But here is an accident which may happen to any wife in the most useful period of her existence, which good authorities have said is never cured, and for which even in this age, when science and art boast of such high attainments, no remedy, either medical or surgical, has been tried with a single success. From the middle of the eleventh century, when Albucasis described the first known case of extra-uterine pregnancy, men have doubtless watched the life ebb rapidly from the pale victim of this accident as the torrent of blood is poured into the abdominal cavity, but have never raised a hand to help her. Surely this is an anomaly, and it has no parallel in the whole history of human injuries. The fact seems incredible, for if one life is saved by active interference it may be triumphantly pointed to as the first and only instance of the kind on record. In the whole domain of surgery—for we cannot look to other than surgical measures under the circumstances—there is now left no field like this. In this accident, if in any, there is certain death. How often do we see persons recover from injuries which their surgeons tell them will be mortal if they do not submit to a grave and terrible operation, and which with a dogged determination they refuse to have performed, preferring to perish rather than to suffer such grave bodily mutilation; or else, with

a keener instinct, they foresee a happier result, and get well notwithstanding the evil prognostications of the surgeon and in defiance of all the laws which, as man with his fallible knowledge supposes, govern human injuries. But in rupture of an extra-uterine fetal sac, in the early stages of pregnancy, a whole lifetime—a whole century—is not enough to enable one person to make two errors in regard to the prognosis of this accident.

“The only remedy that can be proposed to rescue a woman under these unfortunate circumstances is gastrotomy—to open the abdomen, tie the bleeding vessels or to remove the sac entire. The first suggestion of performing gastrotomy to save a woman dying from early rupture of the cyst came, so far as we know, from our countryman Dr. Harbert, while to Rogers belongs the credit of formulating the arguments in favour of this practice and bringing them prominently before the profession. Since he wrote the same plan of treatment has been advocated by Meadows, Hewitt, and Greenhalgh, in a discussion before the Obstetrical Society of London. Koeberle, Behier, Schroeder, and Atlee countenance the proceeding, but no person has yet performed gastrotomy for the relief of this accident. *The great impediment to the adoption of this treatment is the uncertainty of diagnosis.*”

Mark the importance of the last sentence, which I have italicised, for this sentence it is, reiterated by almost every writer on abdominal surgery up to 1878, and continued as a tendency by a great many still, which has stood in the way of our success. I have long since thrown it to the winds, and when I find my patient “in danger of death from conditions within the abdomen which do not seem to be clearly of a malignant nature, but a correct diagnosis of which is impossible, I open the abdomen and at once make the diagnosis certain and a successful treatment possible.”

This is the rule I laid down in 1878, adding to it, for other purposes, that I did the same thing when “the conditions were such that the patient’s life was miserable by reason of suffering which could not be relieved, or at least had not been, by all other measures.” The result has been an enormous advance in abdominal surgery, obtained only after a severe struggle with the authority of the elders, who asserted that the abdomen was a region into which the writs of ordinary surgical laws should not run.

This principle of exploration is nothing new; in fact, the way it is sometimes used, or rather abused, is almost horrible. I once saw a surgeon, who is now a baronet and has a Court appointment, remove a breast with a tumour in it. After he had the whole thing away in his hands, he drew his knife across the tumour and out spurted a lot of pus—“laudable pus.” He had made his exploration after the treatment was complete. If he had explored first his diagnosis would have been completed, his blunder saved,

and the radical and exaggerated treatment rendered wholly unnecessary. I have similarly seen a limb amputated for a sequestrum opening into the knee joint, which a preliminary exploration would have shown to be capable of removal without amputation, and the limb would have been saved. Crowds of illustrations of this kind of theory could be given, showing in the first place, that complete accuracy of diagnosis is no more possible in the breast than it is in the abdomen, that exploration is a sound principle when there is doubt, and that many ghastly blunders would be saved if the practice were extended into general surgery. Absolute accuracy of diagnosis in the abdomen is very far from being possible: only the ignorant assert that it is, and only fools wait for it.

After the terrible lesson given to me by Mr. Hallwright's case I did not see another example of ruptured tubal pregnancy, or one which I suspected to be of that nature, till I was called to Wolverhampton by Mr. Spackman, on January 17th, 1883. There could be no doubt as to the nature of the case, and Mr. Spackman was fully aware of it before I was summoned. The patient was clearly dying of hæmorrhage, and I at once advised abdominal section. The fœtus, about the twelfth week, was lying amongst masses of clot and coils of intestine, and to these latter the partially extruded placenta had obtained new attachments. These I cautiously separated and occasioned, fast and copious bleeding at every point. I wasted much time in trying to stop this hæmorrhage, so that by the time the operation was finished my patient was practically dead. We got her to bed alive, and that is all that can be said. I thought much about this case, for it was a bitter disappointment: I thought I should achieve a triumph, and I had only a failure. But my conclusion was speedily arrived at that I had blundered—that the true method of operating in such a case was to separate adhesions rapidly, regardless of bleeding, and make at once for the source of the hæmorrhage, the broad ligament, tie it at its base, and then remove the ovum debris and clots at leisure. This I have done now in thirty-nine cases with one death, and I think I may fairly say that I have really achieved a surgical triumph. My example has been widely followed, and the success is almost uniform.

The diagnosis of tubal pregnancy before rupture of the tube is not easy, as I have said, because the patients do not claim our attention. What symptoms there are, as in the solitary case where I had a chance of making a diagnosis, are merely those of tubal occlusion and distension—matters very easy to diagnose and to treat. If I ever should make a diagnosis of tubal pregnancy before rupture I should advise its immediate removal by abdominal section, as being more certain and far more safe than the fancy methods of puncturing the cyst and injecting poisonous fluids or passing

through it some kind of galvanic current. There can be, there clearly is from the statements of those who have tried these plans, neither certainty nor safety about them; and they will commend themselves only to such as, by lack of courage and skill to obtain good results, have only bad records to show in abdominal section.

The diagnosis of tubal pregnancy at the time of rupture may be made with certainty seven times out of eight, and may be guessed at in the eighth instance. The symptoms are too serious to be lightly regarded at any time, and are practically coincident with those of pelvic hæmatocele. If the rupture takes place into the broad ligament, they are the symptoms of extra-peritoneal hæmatocele. If the rupture takes place into the peritoneal cavity, they are the characteristic and most serious group which belong to intra-peritoneal hæmatocele.

No more appropriate place than this occurs to me to discuss this much-confused question, if for no other reason than that I have never seen an intra-peritoneal hæmatocele that was not due to a ruptured tubal pregnancy; and very many cases of extra-peritoneal hæmatocele (effusions of blood into the broad ligament) have undoubtedly been tubal pregnancies which have ruptured between the peritoneal folds of that important structure. The difference between them is all important in every way, for the intra-peritoneal ruptures seem to be almost uniformly fatal, whilst the extra-peritoneal hæmatoceles, whether arising from tubal pregnancies or not, should certainly be left to take their own course unless they give signs that they are suppurating.

A most especial interest was given to this question by a trial which took place at Liverpool some two years ago, which raised the whole question, and displayed the extraordinary confusion which existed then in the professional mind upon it.

The first important contribution to the literature of pelvic or abdominal hæmatocele was the work of Bernutz and Goupil, translated by Dr. Alfred Meadows, and published by the New Sydenham Society in its English form in 1866. It appears to me a matter of great regret that the writers of our text-books on gynaecology have so neglected this admirable work; most of them seem never to have read it at all, and in those where it is quoted it is clear that nearly every one of the writers has failed to understand the meaning of the French author. An instance, by no means remarkable as an exception, may be found in one of the most recent text-books on gynaecology—that by Dr. Emmett, of New York—and we see that throughout his chapter on this subject this confusion is remarkably prevalent. The chapter begins with the definition that hæmatocele is an “accidental collection of blood in the pelvis, either in the peritoneal cavity, or outside the peritoneum, or within the connective tissue of the pelvis.” This definition is faulty to begin with, because the second and third

varieties must of course be classed together, and to class under the same name—the common name of hæmatocele—two conditions which must be so absolutely apart as hæmorrhage within the peritoneal cavity and hæmorrhage outside it is the very fountain and origin of all the confusion which has arisen. Dr. Emmet quotes Nélaton as having given the first accurate description of the pathology of the lesion; but in reality Nélaton's views, from the very words he coined to express them, are very largely answerable for the confusion. M. Nélaton regarded the origin of hæmatocele as being from the rupture of a Graafian follicle, the bleeding naturally gravitating from the surface of the ovary to the bottom of Douglas's cul-de-sac, the most dependent point, and for this the term he invented was “retro-uterine hæmatocele.” On page 228 Dr. Emmet gives a diagram labelled a “retro-uterine hæmatocele,” in which the section of the blood-clot is clearly enough placed behind the uterus, but a glance at it will show that such clot never could possibly arise from an ovary, so that either Dr. Emmet is wrong in his notions of the pathology, or he has altogether misunderstood M. Nélaton. On page 231 he gives a diagram which is really the diagram intended by Nélaton, but in which the blood-clot is peri-uterine, and therefore the case in the second instance comes under the definition and title which we owe to Simpson.

Between the appearance of the first real essay on the subject by Bernutz, in 1848, and the translation of his larger work, in 1866, a great many contributions to the literature of this subject were made, each of which advanced some peculiar theory on the subject; and to all of these there may be urged the objection that they were too exclusive, and they did not in any instance, as it appears to me, grasp the whole pith of the case. The word “hæmatocele” is a convenient though not very accurate term, and so long as it is limited to the idea of an effusion of blood it may be taken as the basis of our consideration. The moment, however, such terms as *true* hæmatocele and *false* hæmatocele were introduced confusion reigned supreme. Bernutz held that true hæmatocele consisted of an effusion of blood within the peritoneal cavity, whilst Simpson argued that it could never be an intra-peritoneal effusion. What I am inclined to advise, and for reasons that will be given immediately, is that the phrase “pelvic hæmatocele” ought to be retained to cover all effusions of blood which have their origin in the pelvis. This I advise because it would cover the vast majority of cases of effusion of blood into the peritoneal cavity; for if we exclude the results of traumatic lesion, there are very few effusions of blood into the peritoneal cavity which have not a pelvic origin—a fact which is at once indicated by the extreme rarity of the occurrence in men. With this simplification we can look over the great bulk of the

literature on this subject with a certainty of arriving at more logical conclusions than if we did not accept the limitation. Bernutz and all other writers agree in recognising the fact that any effusion of blood must be regarded rather as a symptom than a disease of itself, and this is true enough if we are discussing merely the etiology of the condition; but if we regard the condition in itself as an entity we certainly cannot accept this as a limitation, for, whatever the origin of the effusion may be, the moment the effusion is in existence it becomes in itself a disease, and sometimes an extremely severe one. But in the two great classes into which I am about to divide hæmatocele this is far more true about the first class than it is about the second, and this is the first indication that we get of the differences which are found to exist between the two classes. This difference is created *ab initio* by differences in the anatomical relations of the effusion.

In the pelvis—indeed we may take the whole abdomen and say in the abdomen—an effusion of blood must be either within the peritoneum or outside it. And let us just speak for a moment on what the primary, what the initial result is in any effusion of blood under these two different circumstances. Let us take an imaginary case of rupture of a bloodvessel in the neighbourhood of the kidney by reason of a blow or other injury. Effusion of blood in that neighbourhood must of necessity be extra-peritoneal; it would travel through the cellular tissue, and by reason of the very fact it had so to travel, provided there was no rupture of a vessel into the pelvis of the kidney, the effusion would be limited, the interstices of the cellular tissue would form the very best of all known hæmostatics, and I find it difficult to imagine that an effusion of blood—let us call it a renal hæmatocele—in the neighbourhood of the kidney could be so extensive as to be fatal, always supposing it were not a main trunk which had been wounded. But on the other hand, if we imagine, from some cause or other, a bloodvessel of the kidney bursting into the cavity of the peritoneum, there would be no natural hæmostatic to assist in the arrest of the hæmorrhage; the bleeding would go on indefinitely, and unless some means could be secured to assist nature in arresting it, the patient would almost with certainty die.

Let us now take another illustration. Suppose that a small vein on the posterior peritoneal surface of the uterus were to rupture and to bleed into the peritoneal cavity. There the blood would of course naturally tend to coagulate, but not in the same way as when extravasated into the connective tissue. All of us who have experience in abdominal surgery know that when blood flows in quantity into the peritoneal cavity, probably by reason of its dilution by the lymph always present there, and easily excited into excessive flow by any abnormal condition, it does not show much tendency to coagulate, save in a very fitful and fragmentary

way. One of the most remarkable proofs of this is the influence of the drainage-tube in arresting hæmorrhage. If the cavity is kept dry by frequent withdrawal of blood and serum oozing from torn pelvic adhesions, the bleeding will soon stop; but if drainage is not kept up the bleeding will probably prove fatal.

Supposing, on the other hand, that a small vein should rupture in the tissue and between the folds of the broad ligament, we should again have exactly the same condition as I have imagined to occur about the kidney; in fact, it would be still more marked, for in the first place the cellular tissue through which the bleeding could permeate is much more limited in quantity than it is in the neighbourhood of the kidney. Again, we have a space between the folds of the broad ligament which is not capable of rapid distension to an indefinite extent. The broad ligament when distended forms a limited cavity, and we shall then have two processes by which the tendency to excessive hæmorrhage is arrested: the first is the natural tendency on the part of the interstices of the broad ligament to limit the bleeding; and, again, the pressure of the broad ligament itself, as a membrane distended and resisting further distension, exercises pressure upon the bleeding point and becomes a powerful natural hæmostatic.

These anatomical considerations alone, were they supported by no other facts at all, would be enough to persuade us into an acceptance of the division, which has often been described but never precisely laid down by writers of this subject, of pelvic hæmatocele into the two classes of *extra-peritoneal* and *intra-peritoneal*, the former corrected and checked by two powerful agencies which are absent in the latter, whilst the hæmorrhage in intra-peritoneal hæmatocele is actually favoured by the dilution of the blood as it passes out of the bleeding vessels. The confusion which has arisen from a want of the recognition of the two classes of cases of intra- and extra-peritoneal may be seen by taking up any text-book on the subject, and turning to the allusions which are made as to the frequency of the occurrence of hæmatocele or to its differential diagnosis, and still more to the treatment. Thus, Dr. Emmet says: "If we limit the acceptation of the term 'hæmatocele' to an accumulation of blood passing into the peritoneal cavity, the accident is comparatively a rare one; but if it is held to embrace all blood accumulations in the pelvis, the occurrence is certainly a far more common one than the profession at large have any conception of." If we accept the first sentence of this passage as alluding to intra-peritoneal hæmatocele the statement is relatively correct, and if we accept the second sentence as referring to extra-peritoneal hæmatocele the statement is absolutely exact; but if we go a few more pages further on in Dr. Emmet's book we find him attempting to make a differential diagnosis between hæmatocele—of which he has given no precise

definition either for extra- or intra-peritoneal effusion—and tubal pregnancy, and the confusion becomes positively amazing; for it will be seen as we proceed that for intra-peritoneal hæmatocele by far the most common cause is the tubal pregnancy for which Dr. Emmet desires to find a differential diagnosis. This is what he says upon treatment: “Surgical interference has been advocated by many in its practice, and been urged as the necessary procedure at an early stage. Unquestionably cases must occur when the surgeon would be wanting in sense of duty if he did not assume the responsibility and puncture the mass. But with a large majority of cases such interference would be criminal, as it needlessly places the life of the patient in jeopardy.” Here, again, what Dr. Emmet says is absolutely true about extra-peritoneal hæmatocele, and it is absolutely untrue about intra-peritoneal effusion. I only desire to say that I have taken up Dr. Emmet as an example of this confusion in English writings, not because he is worse than others, but merely because his work happened to be the first text-book on gynaecology which caught my eye as I started to write this lecture. If we accept the anatomical and physical facts before alluded to as a basis, we shall find that it is not a difficult matter to reconcile a very large number of discordant facts and many discrepancies in the views of various authorities; in fact, the whole story of hæmatocele may be reduced from confusion into order. We shall find also that the two varieties of hæmatocele are different in their relative frequency, in their causation, in their history, and of course particularly in their relative fatality, different in their symptoms and the signs by which they may be diagnosed, and, finally, in their demand for surgical interference.

Dr. Bernutz has expressed an opinion, to which I have already alluded, “that the bloody tumour which is left as the remains of a hæmorrhage has no right to be regarded as a specific disease apart from what has caused it.” This is true, I hold, of intra-peritoneal hæmatocele, but not of the extra-peritoneal variety. When hæmorrhage into the broad ligament occurs the arrest of the hæmorrhage has already been brought about, in the vast majority of cases, by Nature’s own methods, probably even before the accident has been diagnosed, and therefore all we have to do with is the thrombus, and in the great bulk of cases that may be, and generally is, let alone. But cases do arise, as I shall tell you by-and-by, when it becomes a serious disease, for if the sac of the broad ligament bursts into the peritoneal cavity the hæmostatic pressure is relieved and bleeding goes on, the two forms of the lesion co-exist, and the patient bleeds to death. That such an ending may occur, and has actually occurred, is known by a case I shall quote as a result of this secondary rupture of the broad ligament pregnancy cyst, the primary rupture having taken place

at the ordinary period, and the direction of rupture being into the cavity of the broad ligament. The secondary rupture takes place into the cavity of the peritoneum, and proves fatal. I have seen no such case, but more than one is faithfully recorded by Bernutz, and such a case is recorded by Goupil, and is a perfect example of what I can fully believe to be possible, though I have not seen it; therefore I quote it at length.

S—, aged thirty-two, from a delay in menstruation thought herself pregnant, and regarded a metrorrhagia which occurred as an abortion, though she had seen no trace of an ovum. On admission the abdomen was distended, and very tender on pressure, and it was resonant on percussion. The cervix was open, and the uterus was pushed somewhat to the left and forwards by an enormous swelling which was behind it. The posterior cul-de-sac was occupied by a fluctuating tumour which was felt filling up the pelvis entirely, and the fluctuation was very distinct. The diagnosis was (and I regard it as one of the most brilliant on record) intra- and extra-peritoneal blood tumour, probably accompanied by extra-uterine gestation. She gradually grew worse, and died on the third day after admission. She died because in 1855 M. Nonat, under whose care she was, had not been infected by the “restless spirit of surgery let loose” since 1878, which has done so much to save cases such as this.

The post-mortem record of this case, however, is a perfectly peculiar record of facts. In the peritoneal cavity about twenty-five ounces of black fluid blood and clot were found, constituting the intra-peritoneal hæmatocele, the cause of the patient's death. When that was removed an ovoid tumour was observed covered by the peritoneum of the broad ligament. It seemed to be formed by a mass of blood. This was the extra-peritoneal hæmatocele. At the bottom of the left recto-uterine cul-de-sac the peritoneum forming the posterior layer of the broad ligament presented a perforation with a communication between the recto-vaginal cul-de-sac and the cellular tissue separating the peritoneal layers of the left broad ligament. On making an incision into the ovoid tumour a small fœtus was discovered.

The importance of this record cannot be over-estimated, for it proves, as I shall show afterwards, how some cases of broad ligament hæmatocele arise. It shows that broad ligament hæmatocele may occasionally be fatal by becoming intra-peritoneal hæmatocele, and it shows us (this case has shown me) how thirty-eight out of forty of such cases may be saved from death. Further, it proves what is perhaps not very pertinent to the present discussion, that the views I have advanced about the tubal origin of all extra-uterine pregnancies are correct. The only other case of this kind familiar to me is one very imperfectly narrated by Duverney as having occurred in 1712. These two cases are all the

records I have found of the coincidence of intra- and extra-peritoneal hæmatocele, and the combination was due in both instances to rupture of a broad ligament pregnancy with hæmorrhage into the peritoneum. Both cases ended fatally by reason of the hæmorrhage into the peritoneum. I have seen dozens of cases of broad ligament hæmatocele, and have never met with a fatal one. I have seen nearly eighty cases of intra-peritoneal hæmatocele, all resulting in death save those (with two exceptions) in which abdominal section was performed for the purpose of obviating death; so that we find a very wide difference in the results of the two classes of cases in my experience. It will also be found that when the real difference between the varieties is understood, it will explain all the discrepancies in the views held by various authors, and all the confusion will cease.

I propose to deal first of all with the extra-peritoneal hæmatocele, and to give first in detail two cases which prove in every way its character and relations, and which illustrate also two of the exceptional instances in which it requires to be interfered with.

C. T., aged twenty-six was placed under my care in December 1883, by Dr. Faussett, of Tamworth, on account of a large par-ovarian tumour. I operated on January 3rd, 1884, and removed a cystoma of the left ovary weighing fourteen pounds. There were no adhesions, the pedicle was long and thin, and the operation was as easy as possible. A metrostaxis appeared about twenty-four hours after the operation, as is usual after such operations, the only peculiarity in this instance being that the loss was very abundant. It suddenly ceased after being present for about twelve hours, and immediately the patient was in great pain. From having seen the same accident under similar circumstances very frequently, I knew at once what had happened. I examined and found, as I suspected, a large hæmatocele of the left broad ligament. The hæmatocele increased slowly in size until a tumour could be felt above the brim of the pelvis, and the patient suffered greatly. I also found that the rectum was completely blocked, as I had seen it often before, by a stricture caused by the effused blood dissecting round the rectum outside the peritoneum. This is one of the signs of broad-ligament hæmatocele which has not yet been noted by any writer with whose work I am acquainted, and it is of great importance. It does not—indeed it cannot—occur in an intra-peritoneal effusion. In the case of C. T., I tapped the hæmatocele from the vagina and drew off a large quantity of tarry blood, but in fourteen or fifteen hours the sac had filled again, and the patient had become exsanguine. I therefore reopened the abdomen, opened the distended cavity of the broad ligament, emptied out the blood fluid and clots, sponged it out with vinegar and water, fastened the edges in the aperture, to the edges of the parietal wound, and placed in a drainage-tube. The patient then made a

rapid recovery. I only wish to emphasise the fact that this second operation made it absolutely certain that the effusion was in the cavity of the broad ligament, and not in the peritoneal cavity, for the peritoneal covering of the blood mass was perfectly free from adhesions, and its entire relation could be made out with the greatest ease—quite as easily as if it had been a post-mortem instead of an ante-mortem examination.

The second case was one in which a tubal pregnancy had ruptured into the broad ligament, and the subsequent effusion of blood was so great that it caused complete obstruction of the rectum by annular constriction. The diagnosis of broad ligament hæmatocele was easy enough, but I did not diagnose its cause, for the patient had never missed a period. She had been married four years and had never been pregnant. Suddenly she experienced violent pelvic pain whilst engaged in some social amusement, and the symptoms so rapidly advanced that in about four hours she was collapsed. I was called to her and found a large ovoid, well-defined, and quite firm tumour above the brim of the pelvis, the roof quite fixed by an effusion which followed the archings of the pelvic fascia and completely blocked the rectum. It was so firm that I decided not to tap it but to open the abdomen, and it was well I did so. Next morning I carried out my proposal, and removed from the cavity of the broad ligament about two pounds of blood-clot and a fœtus and placenta of about the ninth week. I sponged out the cavity with vinegar and water, stitched the opening in the broad ligament to the opening in the abdominal wall, as in the operation for pelvic abscess, and the patient made a rapid recovery.

This case proves that tubal pregnancies rupturing into the broad ligament (*c*, in the scheme) may occasionally require interference at the time of primary rupture.

Speaking of a series of cases by Nonat, M. Bernutz says very quaintly that there should have been at least one necropsy in order to demonstrate the legitimacy of the different diagnoses—that is, between what he calls true (intra-peritoneal) and spurious (extra-peritoneal) hæmatocele. But these five cases recorded by M. Nonat are precisely in point in the present discussion, for four of them were diagnosed by that eminent gynaecologist as being the subjects of extra-peritoneal effusion, and they all recovered, whilst the patient in whom he diagnosed intra-peritoneal hæmatocele died, and M. Bernutz was gratified by an accurate post-mortem record. Nothing could prove more satisfactorily than this what I contend for: that it is the anatomical relations of the two kinds of hæmorrhage which make all their differences; and now we examine them carefully before death, and by that very examination prevent death by curing them, we get the first corroboration of all that M. Bernutz has said.

Of extra-peritoneal hæmatocele there are only two causes known to me—one very common, and one relatively rare. The first is sudden arrest of metrostaxis, which may either be normal menstruation or the pseudo menstruation which occurs so constantly after abdominal operations. The first case I have just detailed is a typical example of what occurs very often after any operation on the broad ligament, and to the inexperienced surgeon is a fertile source of worry. The accident is always indicated by the sudden access of pain, and often an alarming feeling of faintness. The pulse always rises, and sometimes the temperature does so too. On examination the uterus will be found to be fixed on one side, sometimes on both, and this occurs with a suddenness that puts inflammatory effusion out of the question altogether. In the majority of cases the effusion is not extensive enough to be felt above the brim of the pelvis, but in severe cases it is, and then it forms a rounded and distinctly limited tumour, with a feeling of distinct fluctuation. This upward limitation of the tumour and a distinct vaulting of the upper surface, the effusion of blood round the rectum, and a peculiar concave vaulting of the lower surface of the mass, form the characteristic signs of extra-peritoneal effusion of blood. The mass is, in fact, like an irregularly shaped jelly-fish, rounded above, concave below; and this shape is uniformly regulated by the relations of the peritoneum and pelvic fascia. The edges of the mass are felt to fade off downwards on the walls of the pelvis, just as the groins of a Norman crypt fade off on the brackets or capitals which support them. The effusion of the intra-peritoneal hæmatocele, contained in the rounded cavity of the retro-uterine cul-de-sac, bulges into the vagina like a dilated bag. I cannot form any exact estimate of how many cases of these operative hæmatoceles I have seen, but it certainly is not less than fifty, and is more likely to be seventy or eighty; and I have been induced to meddle only with the one I have narrated. In every case in which I have diagnosed the condition the patient has recovered, and in the necropsies which have been made upon cases operated upon by me no record of the incident occurs; so that I conclude it is an accident very nearly, if not quite, devoid of mortality. Its only drawback is that it delays convalescence for ten or fourteen days, and otherwise I believe it to be of no account at all.

Extra-peritoneal effusion of blood is also very common apart from cases of operation, but by reason of the same sudden arrest of a metrostaxis. Its symptoms in such cases are very much what I have described—sudden pain, a feeling of faintness in severe cases, with a rise of pulse, and even of temperature. On examination the uterus is felt fixed, and generally pushed forwards, with a boggy swelling behind or on one side of the uterus, and if the effusion be large the mass is felt distinctly limited by the

distended broad ligament above the brim of the pelvis; this latter condition being the essential diagnostic difference between the two varieties of hæmatocele. An intra-peritoneal hæmorrhage unlimited in quantity or by membrane has never yet been felt by me as a defined tumour above the brim, and I have now had a large experience of such cases in which the diagnosis was confirmed by operation or post-mortem examination.

Cases of effusion of blood into the broad ligament by sudden arrest, or at least associated with sudden arrest, of menstruation are, as I have said, very common, and I am sure that large numbers of these occur without the patients thinking it worth while to ask for medical assistance, and they get quite well without it. It is, as I have said, a condition probably almost free from primary mortality, and has only a remote secondary mortality when one thrombus breaks down and suppurates, and brings about the tedious condition of pelvic abscess.

Effusion of blood into the broad ligament also occurs from another cause, much more rare and probably much more fatal, certainly much more serious—I mean rupture of a tubal pregnancy, about the twelfth week of its existence, into the cavity of the broad ligament. It is now pretty well admitted that the scheme of the pathology of extra-uterine pregnancy which I have just given in detail covers and explains all the facts of that curious condition, and now it is capable of being used to help us to understand pelvic hæmatocele. Briefly to recapitulate what I have said at length elsewhere, this view is that impregnation under normal conditions can and does occur only in the uterus. So long as the ciliated epithelium is in action in the tubes, spermatozoa cannot enter them, and the ovules cannot adhere to their walls. But the moment an ovule reaches the cleansed and fresh endometrium infiltrated with spermatozoa, its adhesion occurs. Destruction of the ciliated epithelium of the tubes by desquamative salpingitis, or otherwise, reduces the internal tubal surface to the condition of that of the endometrium, and then entrance of the spermatozoa, impregnation, and adhesion of the ovum are possible, and we have the occurrence of tubal pregnancy. The tube is distended by the growing ovum, and as it is not capable of indefinite distensions it ruptures, and the seat of rupture seems to be determined by the site of the placenta, where the sinuses have so channelled the walls as to weaken them greatly. A glance at a section of a Fallopian tube will show (see p. 5) that there are two areas in that section which will severally give very different results, as one or other of them is the site of the rupture. One is much the smaller of the two, and is situated between the layers of the broad ligament, forming, as it were, an ideal roof to the cavity of that space. Rupture here, of course, means that hæmorrhage occurs into the cavity of the broad ligament, and that an extra-peritoneal

Recap

hæmatocele results. Such a case may, as I have already proved from Bernutz, become fatal in its later course by a further and second rupture of the broad ligament cyst and hæmorrhage into the peritoneal cavity. But I feel sure that the great majority of these cases end then and there by the natural cure as mere extra-peritoneal hæmatoceles; the ovum dies and everything is absorbed (*e* in my tabulated scheme). I am quite sure that I have watched several cases of this kind. In the minority of cases the ovum is not killed, but develops into a broad-ligament pregnancy (*d* in my tabulated scheme), formerly known as the "sous-peritoneo-pelvienne" variety of Dezeimeris. I have had seven cases of this kind which I have operated upon, saving five of the mothers and three of the children. Every one of the cases of extra-uterine pregnancy operated upon at or after the full time with which I am familiar comes easily within this explanation, and it makes quite simple what is an otherwise wholly unintelligible jumble in physiology as well as pathology. These cases may die at any point of their subsequent progress up to the full time, and then either remain quiescent as lithopedia (*g* in the scheme), or may suppurate and be discharged in various directions (*h* in scheme). The conclusions therefore are that, save under three sets of circumstances, extra-peritoneal hæmatocele is an accident perfectly free from danger. These are (*a*) when a secondary rupture of the cyst occurs with continued bleeding into the peritoneum; (*b*) when it is merely a stage in the growth of extra-uterine pregnancy; (*c*) when it goes on to suppuration—a condition I shall refer to in its proper place.

I do not think that suppuration of a broad ligament hæmatocele is very common, and yet I have met with quite a large number of cases. Of course by the ordinary methods of proceeding, and those which certainly ought to be adopted in the milder cases, it would be very difficult indeed, if not impossible, to make anything like an exact differential diagnosis between a suppurating hæmatocele of the broad ligament and several other conditions which I need not specifically allude to; and therefore any assertions concerning them, after dealing with them as they used to be, and as I say they ought to be, dealt with in the majority of instances—by tapping from the vagina—may easily be met by the criticism adopted by M. Bernutz against M. Nonat: that at least one necropsy ought to be in existence to prove the assertions. I have, however, already pointed out that an abdominal section performed before death is, for such a purpose as this, quite as satisfactory as a post-mortem examination. In the sixty-third volume of the "Transactions of the Royal Medical and Chirurgical Society" I published a series of six cases in which I had adopted, for reasons of extreme seriousness, an abdominal section for dealing with pelvic abscesses which otherwise would have opened out in the usual disastrous ways. I say there

that "these six cases have all been, so far as I can discover, cases of suppuration occurring in pelvic hæmatoceles;" and I may at once dismiss this question by saying briefly that this depended upon the fact that in clearing out the cavity of the abscesses I removed a considerable quantity of laminated, broken-down, old clot. All these cases were undoubtedly extra-peritoneal hæmatoceles.

Of these cases I select only one as a characteristic example, to illustrate alike their pathology and treatment; and the history of the case is eminently suggestive that it had its origin in a broad-ligament pregnancy.

The patient was sent to me by Dr. Flynn, of Birchills, now of Kingstown, Dublin. She was forty-five years of age, and had never been pregnant save one doubtful miscarriage soon after marriage, nineteen years before. Symptoms resembling those of hæmatocele had occurred after an arrest of menstruation for three months and eight months before I saw her, and since that time she had been losing flesh, had lost her appetite, was troubled by constant thirst and night sweats, and had a rising night temperature. The uterus was fixed in a mass of effusion occupying the left broad ligament and partly the right one also, and the mass on the left side encircled the rectum, forming a pronounced stricture of the rectum, as hæmatoceles of the left broad ligament frequently cause. No point of fluctuation could be felt in the pelvis, but the symptoms pointed clearly to the presence of pus. I therefore determined to open the abdomen, and readily obtained the consent of my colleague to this proceeding. A large abscess was opened just behind the base of the bladder, between which and the uterus it principally lay, but stretching round behind the rectum. The floor and posterior wall of the abscess were found to consist of old laminated blood-clot, so that its origin had been in a blood effusion into the broad ligament. A glass drainage-tube was inserted, and this was changed for one of Chassaignac's wire tubes on the eleventh day after operation. She sat up on the twenty-first day, and the tube was finally removed on the twenty-sixth. She went home on the thirtieth day perfectly well, and has remained so ever since, now nearly eight years.

About thirty of such cases have been operated on by me, and have all recovered. I say about thirty because I could not be sure that all these cases of pelvic abscess originated in suppurating hæmatocele, and I can form no estimate of how many of these were originally cases of tubal pregnancies bursting into the broad ligament and then suppurating, but I suspect that more than half of them were.

Therefore I conclude that extra-peritoneal hæmatocele arising from tubal pregnancy, though rarely fatal, has serious consequences in a fairly large proportion of cases. How different it is with intra-

peritoneal hæmatocele from the same cause, I have already sufficiently indicated. My first experience of this condition was one of the saddest things I have ever known. A young married lady, one of the most charming and brilliant of women, the daughter of an author known wherever the English language is spoken, the wife of one of the most brilliant of surgeons, died after a short illness, and after a post-mortem examination a ruptured tubal pregnancy was found to be the cause of an enormous intra-peritoneal hæmatocele. Another case of immense importance in my own experience, and, I venture to think, of still greater importance in the history of surgery, I have already given, because from that point we have been able to fulfil the indications so urgently presented by the quotations I have made from John Parry.

During the twenty years which elapsed between the case I am speaking of and the first of my surgical ante-mortem experiences of these dreadful accidents I had seen at least twenty-three cases of a similar kind, and therefore I can entirely confirm what M. Goupil says of these cases to this effect: "So frequent is the occurrence of intra-pelvic" (by this he means the true or intra-peritoneal) "hæmatocele that I have made an analysis of forty-two of my cases, which are irrefutable as to their diagnosis." He gives us the causes of these cases. 1. Hæmorrhage caused by the rupture of dilated utero-ovarian veins. 2. Hæmorrhage from rupture of the ovary. 3. Hæmorrhage caused by rupture of the Fallopian tube. 4. Hæmorrhage from the foetal cyst itself having ruptured; and he says, "The largest number of cases fall under the last head." 5. Hæmorrhage within the foetal cyst. Probably, now, M. Goupil would group the last three causes under one head—at least, I certainly should. At another place he says that ruptured tubal pregnancies are very common; for according to Nonat, Baudelocque saw five examples in three months, and I know that anyone who makes a research in our serial literature will find them in abundance. The final argument as to their not being so rare as our text-books seem to assert is the fact that between January, 1883, and July, 1888, I operated upon thirty-nine cases, and succeeded in saving thirty-seven of them—a very striking contrast to the old plan of letting them alone to die. I have never seen a case of suspected rupture, or one in which we suspected intra-peritoneal effusion of blood, recover if left alone.

As to the causes of intra-peritoneal hæmorrhage, I have been able to speak only of two from personal experience—the first, and by far the most common, being ruptured tubal pregnancy. The second is hæmorrhage from some torn adhesions or badly-tied vessel after an abdominal section. Thus, I tied the pedicle of one ovarian tumour with catgut, and the patient died on the fourth day after the

operation. I found a large intra-peritoneal hæmatocele, due to the digestion and loosening of the ligature. In searching the literature of this question I have found one case due to the rupture of an aneurism of the coeliac axis, and a large number of cases having a traumatic origin, chiefly from rupture of the liver. Bernutz and Goupil have collected a few instances due to rupture of dilated uterine and ovarian veins not connected with pregnancy; also two cases of rupture of the ovary in pregnancy. But everywhere the evidence is overwhelming that the most fertile source of this most fatal accident is rupture of a Fallopian tube dilated by a fertilised ovum. In very many of these cases a feature of great interest is the fact that the first attack of hæmorrhage is generally not fatal, and that the records yield incontestible evidence that it may require the repeated occurrence of bleeding to bring about the fatal issue. In some of these attacks hæmorrhage seems to have been separated by long intervals. Thus, one case recorded as having occurred in the *Maison d'Accouchement* in 1816, where the history makes it evident that the tubal rupture occurred at the usual time—in the third month—the fatal hæmorrhage did not occur till the sixth month of extra-uterine gestation. In this case the fœtus was found, so that there could be no doubt as to the nature of the case.

But in some of the instances recorded by Bernutz and Goupil themselves—and I prefer their facts to all others, being, as they are, so carefully sifted and so free from any effort to theorise—it seems to me that the history was that of tubal rupture, repeated hæmorrhage, absorption of the gelatinous fœtus, and final death from hæmorrhage; so that when the post-mortem was made, the absence of a fœtus, which the authors note, blinded them to the real nature of the case. That the fœtus may disappear by absorption is made certain by my own experience. I have removed it only twelve times in my forty cases, though I have found the placenta in every one. Thus, case thirty-two in the work of Bernutz and Goupil is an instance of fatal intra-peritoneal hæmatocele due to a ruptured Fallopian tube, which was distended by a tumour to the size of a pigeon's egg. I have no doubt that a microscopic examination of the tumour would have shown it to have been a placenta. I think that this explanation applied to many of the carefully recorded cases of these distinguished French authors, in which the details given would incline us to characterise them as being identical with that which was the subject of the recent lamentable trial at Liverpool. There are half-a-dozen cases in Bernutz's book which are identical with that case, except that they were all fatal; whereas the Liverpool case was successful, the patient having been saved from death by surgical pluck and skill. That woman's peritoneum was occupied by a quantity of blood-clot

and bloody serum so great that it could be recognised by palpation before the operation. One of the Fallopian tubes was the source of hæmorrhage, because it had a quantity of blood and blood-clot in it when removed. Here is a case almost identical, taken from the *Lancet* of 1848. "A woman aged twenty-eight was suffering from rheumatism, when she was suddenly seized with nausea, vomiting, and pain in the right side of the abdomen; her face became anxious and pallid, the pulse imperceptible, the extremities cold, and the respiration oppressed; in short, collapse was complete, and she died in twenty-four hours, evidently from internal hæmorrhage. On opening the abdomen a quantity of blood was seen, but no rupture of any of the viscera could be detected. In the pelvis a clot was found in the left Fallopian tube. On separating the uterus, its cavity was filled with muco-sanguineous fluid and lined with a decidual membrane. The left tube contained a clot of blood the size of an almond. About an inch from the uterus, at the upper part of this tumour, was a rent, and within was a small sac so compressed and deformed by the clot that it was impossible to say whether or not it was an ovum. The left ovary was the size of an apple, filled with blood, and ruptured."

Another case, on the authority of Dr. Tilt, is given by Bernutz at page 196: "A multipara, aged thirty-seven, was seized with lumbar pain, the menses were four days late, the left hypogastric region became tender, and some tympanites and vomiting followed. She succumbed in ten days. On post-mortem examination there was general peritonitis, a large clot of blood filled the left iliac fossa and pelvic cavity, the uterus was normal in size, and the appendages on the right side healthy; the left half of the uterus and its appendages were larger and more distended than the right; the Fallopian tube midway the size of a nut; a probe introduced at the fimbriated extremity passed into a cavity in the centre of the clot, which dilated that portion of the tube." Another, on page 197, is to the same effect: "On post-mortem examination all the abdominal organs were observed to be quite healthy, but very bloodless. In the pelvis a large quantity of blood was discovered, clotty and fluid. After careful examination of the principal blood-vessels, arterial and venous, without discovering anything abnormal the uterus was examined, together with its appendages, and the source of the hæmorrhage was soon apparent, a small rupture of the right Fallopian tube being discovered at about half an inch from its distal extremity; blood was oozing from it, and it was evident that this was the seat of the bleeding. The tube itself was also a good deal enlarged."

Dr. Goodall also gives a fatal case where death occurred from about eight pounds of blood being lost from the Fallopian tube, though there was no evidence of a tubal pregnancy.

Case 2 given by Bernutz (page 208) is extremely instructive,

because it is a fatal case of hæmorrhage from the Fallopian tube in a young woman aged twenty-two, due apparently to measles. "On post-mortem examination hæmorrhage was found to have proceeded from the left Fallopian tube, which was distended to the size of the index finger, and contained about two ounces of blood, partly fluid, partly coagulated, and through the abdominal orifice as much as sixteen ounces of blood had escaped into the pelvis. These samples of hæmatocele occurring in rubeola, scarlatina, and variola demonstrate that this accident may occur in any severe fever."

Finally, I wish to refer to a case originally contributed to the *London and Edinburgh Monthly Journal* for 1841, because it establishes beyond all doubt that fatal hæmorrhage can occur from the Fallopian tube into the peritoneum under circumstances where the occurrence of rupture of the tube by an ovum is out of the question. An illustration of the tube is given. "A large quantity of blood was effused into the abdomen and pelvis, mostly coagulated but partly fluid. At first it was impossible to say whence all this blood came, but on examining the pelvic viscera solid coagula were observed protruding from the open orifices of the Fallopian tubes. The tubes themselves were filled with blood and distended at a short distance from the uterus up to the distal extremity. The condition of the parts is very well shown in the accompanying sketch, which represents the serous state of one of the tubes and the appearance of the clot attached; the latter has a sort of lobulated appearance, produced by the constrictions exerted upon it in its passage along the tube. The other tube was the same. The greater part of the blood found in the pelvis escaped from the tubes, no doubt in a fluid state, but that which was attached to the tubes was coagulated before it left the canal, as is evident from its shape."

Concerning the prognosis of such cases Goupil says: "It is but too true, I fear, that we are authorised in saying that all the cases of intra-peritoneal hæmorrhage arising from extra-uterine pregnancy, end in death; in fact all the cases that I have quoted have terminated in death. Generally it has taken place in a few hours or days, and though death has been delayed for six months (as in the case already quoted) it is wholly exceptional." This was absolutely true in my own experience till I was emboldened—shall I say till I was shamed—by Mr. Hallwright's case into opening the abdomen and saving their lives.

We come to the following conclusions: That in the great majority of cases of extra-peritoneal hæmatocele, even when due to ectopic pregnancy, the disease may generally be left alone, being rarely fatal, and that it is to be interfered with only when suppuration or extreme hæmorrhage has occurred. That, on the contrary, intra-peritoneal hæmatocele is fatal with such

almost uniform certainty that so soon as it is suspected the abdomen must be opened and the hæmorrhage arrested. In the overwhelming majority of cases the source of the hæmatocele will be found in the broad ligament, and then it can be dealt with, and with every prospect of success. If anyone objects to this, I appeal again to the canon of surgery which is of uniform application: For surgical hæmorrhage cut down and tie the bleeding-point; if a big branch of the femoral artery were bleeding, my colleagues who deal in such cases would cut down and tie it. Why should Poupart's ligament be a line of demarcation within which this surgical writ will not run? Why should my friend Mr. Bryant be allowed to do to the external iliac artery what I am prohibited from doing to the internal iliac division? Indeed, at page 202 of Bernutz and Goupil's work they assert this principle: "The indication in such a case is plain—we must stop the hæmorrhage."

A very admirable contribution has recently appeared from the pen of Professor Charles A. L. Read, of Cincinnati, which has so completely corroborated what I had already published on the matter that I venture to make some abstractions from his writings.

"It is stated by Mr. Lawson Tait ⁽¹⁾, in the 'Ingleby Lecture' for 1886, that Bernutz ⁽²⁾, in 1848, was the first to recognise the causal relationship existing between tubal pregnancy and hæmatocele, and to indicate the proper line of treatment—viz., laparotomy and ligature. I am disposed to accept this claim for Bernutz, so far as it relates to a suggestion of treatment; but I must insist that all the *essential conditions* of intra-abdominal accumulations of blood from ruptured tubal pregnancy were recognised and described ⁽³⁾ by one of Mr. Tait's own countrymen, Dr. John Burns, of Glasgow, as early as 1814. It is true Burns does not use the word 'hæmatocele,' which was coined by Nélaton a quarter of a century later, and is such a positive misnomer that it had better never have been coined at all.

"Burns, however, said that 'the sac might burst and the patient die from hæmorrhage.' He clearly described the subsequent changes when he said that 'irritation is produced, inflammatory symptoms supervene, and hectic takes place.' He still further indicated his insight into these cases when he said of them that 'the most frequent termination is that by inflammation ending in abscess.' And I know no better way to round out a description of what is now known as hæmatocele than by employing Burns's observation that the suppurating contents of a burst tubal pregnancy 'might be enclosed in a kind of cyst of

⁽¹⁾ *Lancet*, October 30th. 1886.

⁽²⁾ Bernutz and Goupil: "Diseases of Women," translated by Meadows. New Sydenham Society, 1866.

⁽³⁾ "Principles of Midwifery," by John Burns, edited by James, Vol. I., p. 168. Philadelphia, 1817.

lymph.' Blundell ⁽¹⁾, writing in 1830, recognised the same condition, and said that he did not doubt that 'many women die in this way, but, being buried without examination, the real cause of their death is never ascertained.' He even went so far as to mention the expediency of abdominal incision for the control of the hæmorrhage, but, doubtless, under the pressure of the mediæval conservatism of Guy's Hospital—a conservatism which still exists in that institution—he abandoned the idea, leaving it to be again suggested by Bernutz thirty years later, and finally to be realised by Mr. Lawson Tait after the lapse of a half-dozen decades. Between Blundell and Tait numerous writers touched upon both topics, but relatively few of them recognised that tubal pregnancy caused intra-peritoneal hæmatocele. As soon as Nélaton, and, subsequently, Bernutz and Goupil, began to write upon hæmatocele the profession appeared to drift away from the definite etiology and pathology so clearly outlined by John Burns, until latter-day authors attribute the condition to almost every other than what I believe to be the one most fruitful cause."

"It is fortunate, however, that the other side of this important pathological question has not been entirely neglected. From the time Blundell, in 1830, and Bernutz, in 1848, guessed at the nature of these cases and suggested the expediency of abdominal section for the control of the progressive hæmorrhage, there was no one to put the suggestion into practice until Mr. Lawson Tait ⁽²⁾, in 1883, did the operation. It was the beginning of a new era in the intelligent understanding and management of these hitherto intractable cases. Prior to that time the mortality was almost one hundred per cent.; since that time I have heard of no one losing a case subjected to Mr. Tait's line of treatment, except in one instance, and that was a case in Mr. Tait's own hands. The pathology upon which the treatment was based, and which has been confirmed by the revelations of the treatment itself, has, however, been more generally accepted than has the practice. Schroeder ⁽³⁾, J. Veit ⁽⁴⁾, and Kiwisch ⁽⁵⁾ are among the leading Germans who agreed with Fritsch ⁽⁶⁾, that 'the most frequent source of the hæmorrhage is the ruptured ovisacs of a tubal or other extra-uterine pregnancy.' Among gynaecologists, Tait, Imlach, Berry Hart, Thomas, and Emmet are among the most conspicuous who concur in the doctrine, while among the obstetricians, Lusk, Parvin, Barnes, Galabin, and Playfair may be mentioned; indeed, it appears that among those who are the closest students of this question there is practical unanimity that

(1) "Principles and Practice of Obstetrics," p. 442. Washington, 1834.

(2) *Lancet*, October 26th, 1886; also, "Diseases of Ovaries," p. 348.

(3) "Handbuch der Krankh. der weibl. Geschlechtsorgane," 7 Aufl. Leipsic, 1886.

(4) "Zeitschrift für Geburt und Gynäk," 1884.

(5) Quoted by Lusk: "Midwifery," p. 289.

(6) Fritsch: "Dis. of Women," p. 289. New York, 1883.

tubal pregnancy is the most common cause of intra-peritoneal hæmatocele, but, as I have intimated, there is less unanimity on the subject of treatment. Why there should be variance on this question, when there is practical agreement on the more primary and fundamental one, is not apparent, unless we shall find that different constructions are placed upon those pathological changes which take place subsequent to extravasation. To my mind those changes were described with great fidelity to truth, if not to details, by John Burns, already quoted.

"With this pathology as the guide, the duty of the surgeon with regard to treatment is, to my mind, obvious. It is merely an application of that general law of surgery which, as formulated by Tait and applied to these cases, is as follows: 'For surgical hæmorrhage, cut down and tie the bleeding-point; if a big branch of the femoral artery were bleeding, my colleagues who deal with such cases would cut down and tie it. Why should Poupert's ligament be a line of demarcation within which this writ will not run?' Bernutz and Goupil (1) say, 'The indication in such cases is plain—we must stop the hæmorrhage.' No person, I fancy, who properly realises the situation in the cases will deny the propriety of the proposition; but it occurs to me that there are other indications than hæmorrhage for surgical interference—the damaged tube, the foetal structures, and the placenta tissue demand attention. Of the latter two it may be said that, even though they become encapsulated and partially absorbed and the residue remain innocuous, they cannot be considered in a surgical sense other than as foreign bodies, and, as such, constant menaces to the health and life of the patient. The tube of necessity becomes destroyed as an oviduct, and, if left intact, it will only be to figure at a later period as a hæmato-salpinx or a pyo-salpinx, and consequently to demand extirpation."

Dr. Read concludes this paper with the following summary: (1) Intra-peritoneal hæmatocele is an intra-peritoneal accumulation of blood. (2) Ruptured tubal pregnancy, the most common form of extra-uterine foetation, gives rise to an accumulation of blood within the peritoneum. (3) In consequence of the fluid condition of the extravasated blood, and of the yielding character of the adjacent tissues, the hæmorrhage has a tendency to continue. (4) In consequence of the death of the foetus, there is developed a marked tendency to suppuration. (5) In consequence of becoming a foreign body, the product of conception, even though it become encysted, is a constant source of danger. (6) The damaged tube, if left *in situ*, can serve no other than a pathological purpose. (7) Abdominal section is therefore called for (a) to control progressive hæmorrhage, (b) to remove dangerous *debris*,

(1) "Diseases of Women," p. 202. New Sydenham Society.

(c) to extirpate worthless appendages, and (d) to overcome septic conditions.

I have now to conclude this important branch of my subject by submitting a list of the cases, properly authenticated, as the custom now is, in which I have performed this operation up to time of writing. The number is thirty-nine,* and I need hardly say that this number includes every case of the kind I have done. There have been only two deaths. The first was due to my want of appreciation of the proper principle of the operation, and the second was due to the fact that the patient was practically in *articulo mortis* when I operated, interference having been too long delayed. The results on this list show a very different possibility of prognosis in this dreadful disaster, when promptly treated on sound surgical principles, from that so hopelessly pronounced by Dr. Parry when they are left alone: "From a careful examination of this subject it must be acknowledged that a happy termination of the rupture of the cyst is exceedingly rare." "Of 149 cases in which the ovum was located in that portion of the tube which does not traverse the tissues of the uterus, 145 died."

* The full number is forty, including the extra-peritoneal case given on p. 467.

No.	Residence.	Medical Attendant.	Age.	Date.	R.	D.
1	Wolverhampton	Dr. Spackman.....	41	17, I., 1883	...	D.
2	Solihull	Dr. Page	40	3, III., 1883	R.	...
3	Birmingham	Dr. Taylor.....	37	10, IV., 1884	R.	...
4	Birmingham	Dr. Wilson	27	21, V., 1884	R.	...
5	Birmingham	Dr. Leech	34	6, VI., 1884	R.	...
6	Walsall.....	Dr. G. Sharpe....	28	23, VII., 1884	R.	...
7	Smethwick	Dr. Pitt	31	29, X., 1884	R.	..
8	Birmingham	Mr. Farncombe ...	30	28, XI., 1884	R.	...
9	Birmingham	Dr. Ward	35	9, XII., 1884	R.	...
10	Wolverhampton	Dr. Scott.....	41	9, II., 1885	R.	...
11	Birmingham	Dr. A. E. Clarke	30	2, IV., 1885	R.	...
12	Birmingham	L. T.	37	5, V., 1885	R.	...
13	Birmingham	Dr. Whitcombe...	25	11, V., 1885	R.	...
14	Birmingham	Dr. Whitby	34	2, VII., 1885	R.	...
15	Birmingham	L. T.	42	11, VII., 1885	R.	...
16	Wolverhampton	Dr. Watts	31	2, IX., 1885	R.	...
17	Manchester	Dr. Walter	26	6, IX., 1885	R.	...
18	Birmingham	L. T.	28	19, IX., 1885	R.	...
19	Birmingham	L. T.	42	23, X., 1885	R.	...
20	Coventry.....	Dr. Davidson	37	31, X., 1885	R.	...
21	Tipton... ..	Dr. Price	24	2, II., 1886	R.	...
22	Oldbury	Dr. Cunningham	35	3, VII., 1886	R.	...
23	Birmingham	Dr. Wilson	32	16, VII., 1886	R.	...
24	Tipton.....	Dr. Price	34	27, IX., 1886	...	D.
25	Birmingham	Dr. A. E. Clarke	44	26, I., 1887	R.	...
26	Birmingham	Dr. Hoare	31	18, II., 1887	R.	...
27	Halifax	Dr. Dolan	29	17, II., 1887	R.	...
28	Coleford	Dr. Prosser	29	27, IV., 1887	R.	...
29	Walsall	Dr. Gordon	30	6, V., 1887	R.	...
30	Birmingham	Dr. Lafarelle	44	19, IX., 1887	R.	...
31	Birmingham	Dr. Wilson	29	20, IX., 1887	R.	...
32	Wrexham	Dr. Williams.....	37	30, IX., 1887	R.	...
33	Nottingham	Dr. Hunter.....	37	16, XI., 1887	R.	...
34	Birmingham	L. T.	37	16, XII., 1887	R.	...
35	Birmingham	Dr. Harmar	41	7, I., 1888	R.	...
36	Birmingham	Dr. Vokes	30	16, II., 1888	R.	...
37	Kidderminster ..	Dr. Jotham	38	11, V., 1888	R.	...
38	Derby	Dr. Carter Wigg	27	12, VI., 1888	R.	...
39	Ilfracombe	Dr. Slade King...	27	9, VII., 1888	R.	...
40	Birmingham	Dr. Drury	26	28, VIII., 1888	R.	...
41	Birmingham	Dr. Bracey	27	29, VIII., 1888	R.	...
42	Birmingham	Dr. Hallwright ...	35	25, IX., 1888	R.	...

The patients were all married women.

Two of these cases require further details for special reasons—the first (number 13) as, strangely enough, she fell a victim to a second calamity of the same kind; and the whole of her history is as follows:—

On May 10th, 1885, Mrs. E. R., aged 25, was sent to me by Mr. W. P. Whitcombe, Victoria Road, Aston, suffering from urgent abdominal symptoms. The history was to the effect that she had been ailing from a short time before Christmas. She thought it was pregnancy. Menstruation had been suspended for three months. In April she had a period, and again early in May, and at the latter time she complained of violent pains in the lower abdomen, and on the 9th she had an attack of fainting with vomiting, the pain being referred to the lower abdomen. When I saw her she looked extremely ill and anæmic. A large ill-defined mass existed on the right side of the uterus intimately associated with the organ, and the roof of the pelvis was fixed. There was no difficulty in diagnosing the case to be one of ruptured tubal pregnancy. I opened the abdomen on the 11th, and found the belly full of blood-clots and bloody serum. I removed the right Fallopian tube, which was occupied by a pregnancy of about the third month, and in its walls a large rent had occurred, through which the fœtus and placenta were partly protruding. Some points of bleeding from the intestine required touching with perchloride of iron; I inserted a drainage-tube, and the patient made an easy and rapid recovery. The case is published in a short paper on Ruptured Tubal Pregnancy, in the *British Medical Journal* of December 19th, 1885.

About eighteen months after this operation, she was confined of a child, at the full term, being attended by a midwife, and there was nothing remarkable about the labour.

About fifteen months after this confinement she again became pregnant, and her husband states that during the period of this pregnancy (which she thought had turned four months) she had no symptoms of note, but only complained at intervals of slight pain in the abdomen, but not sufficiently severe to induce her to call in medical assistance. The only point on which he lays any stress was that she stated that she felt the child very plainly, more so, it seemed to her, than at the same period in any previous pregnancy.

Mr. Whitcombe was sent for to see her in the forenoon of March 9th, but he being from home, the patient was seen by his assistant shortly before one o'clock on that day. She was lying fully dressed on the bed, her knees drawn up, and was complaining of great pain in the hypogastrium. She was extremely pale and almost pulseless, and had had some vomiting. Mr. Hall was informed that only half an hour before she had been cleaning her fireplace, and, in the act of stooping, was seized with acute pain and a

feeling of faintness. Stimulants were at once administered, and every effort made to restore her without avail, and the patient died shortly after 5 o'clock—clearly from internal hæmorrhage.

Mr. Whitcombe made a post-mortem examination, and has been kind enough to give me the following particulars:—He found the abdomen full of blood-clots and fluid blood; a large clot was adherent to a portion of the placenta which protruded from the uterine wall, and when this clot was separated it had a quantity of villous placental tissue adherent to it. All the organs were very anæmic, and there could be no doubt that the hæmorrhage was the cause of death. Mr. Whitcombe was good enough to bring me the preparation, and, aided by my assistant, Mr. Teichelmann, I am enabled to give the following report and drawing of the appearances presented.

There can be no doubt that the specimen represents an interstitial tubal pregnancy of the left side. The cavity in which the foetus is situated is separated from the true uterine cavity by a strong septum of uterine tissue springing from each side of the uterine walls. The under surface of the septum and the rest of the uterine cavity is lined by hypertrophied mucous membrane (decidua) (B). The stump of the right Fallopian tube (c) is attached to what appears to be the lower angle of the uterus, but which is really the much-displaced upper angle. This displacement, however, is only apparent, and arises from enormous development of the left cornu of the uterus. A fine probe may be passed from the true uterine cavity into this stump. The left

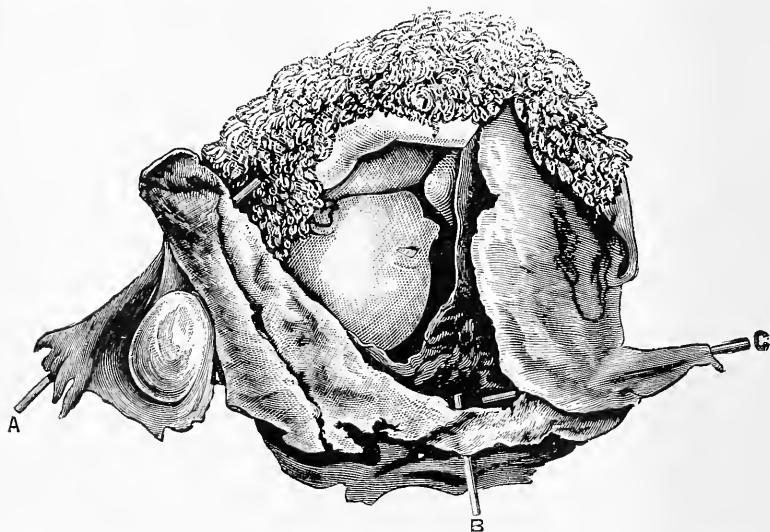


FIG 61.—Drawing from preparation of interstitial pregnancy (Case xiii.) now in Queen's College Museum.

Fallopian tube (A), on the contrary, communicates with the cavity in which the fetus and placenta lie, and the rupture has taken place in the upper and back part of the left uterine cornu. In this case we have the almost incredibly strange instance of a woman suffering from tubal pregnancy twice, with the still stranger fact of her having a normal pregnancy between the two occurrences.



FIG 62.—Diagrammatic representation of interstitial tubal pregnancy at time of rupture.

From the first of her disasters she was saved by prompt surgical interference, and she might even have been saved the second time; but there can be no doubt that the poor woman's doom was sealed before medical assistance reached her, and there was no time then to effect the interference which was necessary. All the appearances of the preparation point to the fact that the woman's estimate of the period of her pregnancy was correct, and we have therefore an indication that the interstitial form of pregnancy does, as we might have expected it would, take a longer time to arrive at the period of primary rupture than do those cases in which the pregnancy occupies the free part of the tube. In these latter we have no evidence as yet of any instance going beyond the twelfth or thirteenth week before primary rupture. It may be noticed here I am introducing a new phrase in using "primary rupture." I do so because I am becoming convinced that unless we make such a distinction as I have indicated we shall still continue some of the elements of confusion which exist about this interesting displacement.

It is perfectly clear that in all cases of tubal pregnancy, when the ovum is growing, the tube must burst, and that it bursts in

two directions—either in to the peritoneal cavity or into the cavity of the broad ligament. In the free part of the tube this rupture takes place, as I have said, about the twelfth or thirteenth week. In the interstitial form, the case before us shows that the rupture may be deferred to a later date. The primary rupture into the peritoneal cavity seems to be almost necessarily fatal alike to mother and child; but when the rupture occurs into the cavity of the broad ligament, it may be followed by a continuance of the development of the child, and these only are the cases in which the child is permitted to reach a viable period.

In a recent number of the *New York Medical Record*, a case is reported by Dr. Taft as being one in which no rupture had taken place. But the description given makes it perfectly certain that this was a case where the primary rupture had taken place into the cavity of the broad ligament. In this group of cases a secondary rupture at any period is possible, and therefore it is that the adoption of the terms used strictly to indicate relative dates will become very useful. This secondary rupture was most clearly demonstrated in Nonat's celebrated case as given by Bernutz, a case which, on account of the occurrence of this secondary rupture, is full of the greatest interest (see p. 32). This secondary rupture explains such an occurrence as that in Jessop's celebrated case.

Connected with the case I am now discussing there are many important points worth alluding to, some of which are new, and others, though quite familiar, are worth noticing on account of the confusion which still seems to exist in the minds of most recent writers on this subject, some illustrations of which I have already given.

The patient was rather an intelligent woman for her class, who, having undergone the terrible experience involving her first operation, had obtained a fairly full knowledge of the nature of the accident, and what had been the condition as a consequence. Yet, with this dreadful experience, and the knowledge of it when the same condition recurred, so little did she suffer that, up to the moment of rupture, knowing she was pregnant, she never thought of asking for medical assistance; and this was the case also in her first tubal pregnancy. There were no symptoms whatever to draw attention to her state until the rupture occurred; indeed, there were no symptoms even calling for examination.

The strangest thing of all to me is that, in the enormous experience I have now had of tubal pregnancy, I have never but once been called upon to make an examination until the rupture had occurred, and in that case there was neither history nor symptoms which enabled me to do more than determine that there was tubal occlusion; not, indeed, until the rupture occurred and the abdomen was opened was a diagnosis possible. Under these circumstances I think I may be excused for maintaining a

somewhat sceptical attitude concerning the correctness of the diagnoses of those gentlemen who speak so confidently of making certain diagnosis in cases of tubal pregnancy before the period of rupture, and who speak with equal confidence of curing the cases by a puncture, either simple, medicated, or electrolytic.

The great bulk of the utterances in these directions may stand very well in "society discussions," or in "library papers," but they will not stand the test of bedside experience. Upon these points I have been much misrepresented, and am glad to have an opportunity of clearly stating my views; but I wish to state that after the period of rupture a diagnosis can be, and has in my own experience been made correctly in the majority of instances.

Another point in connection with this interesting case is the fact, made abundantly clear by the preparation, that, no matter what the symptoms had been previous to rupture, physical examination could not have permitted any diagnosis other than that of normal pregnancy of about four months and a half.

This is my solitary experience of interstitial tubal pregnancy, but it so closely resembles a number which I have seen in museums that I take it to be quite typical of its class. I am therefore disposed to believe that from physical examination interstitial tubal pregnancy could not be diagnosed, and I can imagine no symptoms which would help us to recognise it before rupture.

The whole of the museum specimens of this class do not appear to amount to more than five or six. There is one in the Edinburgh College of Surgeons, one in the museum at Guy's Hospital, one in the museum at University College Hospital, and another in the museum of the College of Surgeons, described by Mr. Alban Doran. That authority has also mentioned two in the museum of the London Hospital, which clearly, however, do not belong to this class at all, but are broad-ligament pregnancies. Dr. John Parry, speaks of 31 cases of interstitial pregnancy in his table of 500 of all kinds, but that he is mistaken in the great bulk of this group of 31 there can be no doubt whatever. This is, indeed, one of the illustrations of the want of critical acumen on the part of Dr. Parry in making his statistical collections. There can be no doubt that this interstitial form is much more rare than he believed.

If we were to assume that in such a case as this a diagnosis could be made, much ingenious speculation might be indulged in as to what could have been best to do for the patient. If a correct estimate of the relation of parts could have been made, clearly what ought to have been done was to dilate the cervix, divide the septum freely, and empty the cornual cavity. To have attempted to destroy the child would not have benefited the patient one bit. The placenta would have gone on growing; and even if it had not putrescible material would have been left, which must have burst into the peritoneal cavity. At the time of rupture, if surgical

assistance could have reached the woman with sufficient promptitude, she might have been saved by a hysterectomy; and from the appearances at the post-mortem examination, there is no doubt that this could have been easily accomplished.

The last case on my list is also worthy of recital in detail, because it proves what we might have expected would occur occasionally, though it has never before been clearly proved: that intra-peritoneal rupture of a tubal pregnancy may not have an immediate fatal ending from hæmorrhage. In such a case we might expect that intra-peritoneal digestion of the ovum would prove a satisfactory solution of the difficulty; but here it did not. A suppurative process interfered, the patient had repeated attacks of peritonitis, from which she nearly died; and, had I not relieved her from the presence of the decomposed remains of the ovum in a large suppurating cavity, there is no doubt that one or two more such illnesses as it had already caused would have seen the end of the case.

The patient in question was twenty-seven years of age, had been married six years, and had never been, as far as she knew, pregnant—this being not unfrequently a leading feature of these cases. She had menstruated with perfect regularity until Christmas, then she had missed till March, and during the whole of that time she had been confined to bed with what was called inflammation of the womb, and was attended during that illness by a well-known practitioner in Liverpool. At the beginning of March she had so far recovered as to be able to get up for a short time, but on the second day of her getting out of bed, she was suddenly seized with acute violent pain, and was kept in bed again for three weeks with what was said to be, and what clearly was from her description, an attack of acute peritonitis. Early in April she returned home to Ilfracombe, and was then seen by Dr. Slade King, who recognised the fact that there was a tumour on the left side of the uterus. In April she had an attack which she described as being very like a recurrence of the peritonitis that she had in the previous month, and there had been two or three attacks since then, more or less severe. She had menstruated twice for a fortnight each time, the loss being very profuse, and the pain extremely severe. When I saw her on July 4th, she was emaciated, in constant pain, quite unable to get about, and evidently suffering from the presence of pus in the pelvis. Examination revealed a tumour, quite as large as a foetal head, on the left side of the pelvis, fixed and extremely tender to touch. Such a history gave no clue whatever to what proved to be the real nature of the case, for even the suspension of the menstrual flow from January till March was what precisely might have occurred in a case of hæmatocele of the broad ligament, or in several other conditions which might have been referred to as an explanation of this case.

Certainly, in the minds of those who gave the history, the suspicion of pregnancy had never been entertained, and my own diagnosis did not include a differential suggestion in the direction of tubal pregnancy, but was given as that of suppuration of the left Fallopian tube. That diagnosis proved to be perfectly correct so far as it went, but to be complete it ought to have been extended to include suppuration as the result of ruptured tubal pregnancy, but such an extension did not occur to me. The state of the patient was such as to demand immediate interference, and therefore I opened the abdomen, and found a state of matters the details of which were easily ascertained, and were as follows:—

The omentum was glued over the contents of the pelvis, and I had a little difficulty in detaching its fringe from the base of the bladder. After I had done so, I found several coils of intestine adherent below it, and, on removing these, I at once opened up a cavity from which escaped a quantity of extremely foetid purulent fluid.

This cavity was as large as a Jaffa orange, and the first thing I came in contact with was a large mass of easily-detached substance, recognised at once by my fingers as a piece of placenta. I removed it, and the naked-eye appearances confirmed what I had uttered about it before I removed it. I then easily recognised that the cavity from which I had taken it was formed of the dilated and distended Fallopian tube, forming the anterior, posterior, and lower walls of the cavity, whilst the upper part was composed of the coils of intestine and omentum, which I had partly detached. All round the cavity I could feel a number of sharp hard points, and these I easily recognised as foetal bones embedded in the walls of the cyst. I removed as many of them as I could, and found that they were what I had believed them to be, for included in what I removed were a number of foetal ribs and flat bones. I then proceeded carefully to detach that part of the cyst formed by the Fallopian tube, and when I had done so, I tied the pedicle, and removed what you now see before you. The presence of fimbriae proved conclusively the accuracy of my supposition. We have here, then, a case of the greatest possible interest, for it proves—what certainly has not been completely established up to the present time—that rupture of a tubal pregnancy into the peritoneal cavity may not be fatal at the time of rupture by reason of recurrent hæmorrhage. There is one case quoted by Campbell, and originally narrated by the late Mr. Samuel Hey, of Leeds, in which I think it is possible to accept this conclusion as very nearly proved; but the difficulties of a certain diagnosis of ruptured tubal pregnancy are so great that without the complete proof which can be obtained only from a post-mortem examination or an abdominal section it is very easy to throw doubt upon any such record.

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(over)

Here, however, we have absolute proof of the occurrence of tubal rupture into the peritoneal cavity, not only without a fatal issue at the time, but apparently without the occurrence of much hæmorrhage. It is, however, very likely that such cases are very rare.

In the absence of this fatal incident of hæmorrhage, it is not difficult to believe that the whole contents of the tube may be absorbed by the peritoneum, as the foetus was in process of being absorbed in this instance; and but for the occurrence of suppuration, it probably would have been so completely absorbed in a few months that no trace of its existence could have been recognised. The facts, however, that in nature's own process of cure an interruption by suppuration occurred, leading to such extreme peril that the patient escaped narrowly at least three times from peritonitis, and that if she had been left alone long her death from the recurrence of this trouble would have been absolutely certain, show completely that it is never safe to leave these cases to a natural termination, and that their treatment by electrolysis is mere nonsense.

It is impossible to imagine that the Fallopian tube could ever have resumed its functions after being submitted to such an accident as this, and it is not difficult to believe that for months after, if not for years, it would have continued liable at any moment to the suppurative process, which you see here had taken place.

The patient has made an easy recovery, and under these circumstances, and with a growing experience of the small fatality resulting from this operation, I unhesitatingly recommend the removal of the Fallopian tube, together with the remains of the pregnancy, in every instance, and as soon as possible.

It must now be clear that the progress of an ectopic gestation is the subject of a great cataclysm, the primary rupture of the tube duct, which may, and in the great majority of instances most certainly does, arrest its progress by destroying at one blow both mother and child, unless the surgeon boldly steps in to save the former.

We have now to consider the minority of cases in which the ovum survives the process of rupture, and this it can do only when the rupture takes place into the cavity of the broad ligament.

When the rupture takes this direction there is a great probability that the process is accompanied by hæmorrhage into the cellular tissue, and that we have a hæmatocele resulting. The actual proof of this I place on record at page 32, and I have no doubt, as I have already said, that many of the suppurating hæmatoceles upon which I have operated, have been originally tubal pregnancies in which the rupture has taken place into the broad ligament and has caused hæmatocele. And I am quite as certain that many of the extra-peritoneal hæmatoceles which we

see, and with which we never interfere, are also produced in this way. It is easy to understand now how Parry could say that "extra-uterine gestation may be occasionally confounded with pelvic hæmatocele. It may sometimes be impossible to distinguish between them." This must be clearly the case when the hæmatocele is a mere stage or a result of the processes of the extra-uterine pregnancy. The confusion into which Parry gets at this point is very interesting, for it leads him to a series of quotations, and a series of inconsistent conclusions which go a very great way negatively to show the value of the scheme of ectopic pregnancy for which I am now arguing. Thus he says, "It has been stated, however, that peritonitis, by which means alone intra-peritoneal effusions can become encysted, rarely follows the rupture of an ectopic gestation;" and in this he is perfectly correct." Peritonitis rarely occurs in these cases, and the talk there is about the collections of blood becoming encysted by inflammatory process is the merest nonsense. The encystment is brought about by the distension of the broad ligament by the effusion of blood into its cavity, and of course exists from the first. Parry quotes a case from Matthews Duncan, in which the latter authority gives his facts so clearly as to admit of no doubt as to what had happened, but without in the least understanding them. Duncan says that the woman had all the symptoms of intra-peritoneal hæmorrhage about a month before her death, whereas it was extra-peritoneal hæmorrhage into the broad ligament which he describes. He goes on to say that the process of encystment was going on with every prospect of recovery, when the tumour (a broad-ligament hæmatocele) burst into the cavity of the peritoneum (by a secondary rupture), causing fatal peritonitis. It would be difficult to find a clinical record so clearly given as this, with the evident conclusions so maladroitly overlooked and erroneous inferences put on record. The strangest thing, however, is that this broad-ligament hæmatocele of Duncan is correctly interpreted by Parry in another part of his book; but still the true conclusion escaped him. In another passage Parry strongly urges the argument against the encystment theory by peritonitis as follows, and I entirely agree with him:—"There are few things in regard to extra-uterine pregnancy which excite more surprise than the rarity with which peritonitis is noted, upon examination after death, from rupture of the foetal cyst. The practical conclusions that may be drawn from a careful investigation of this subject are that peritonitis is a rare sequel of rupture of the cyst, and even when pain, tenderness, and other symptoms of this affection supervene after the escape of the ovum, they do not necessarily indicate the existence of inflammation.

"Peritonitis so rarely follows rupture of an extra-uterine gravid cyst, that the possibility of its occurrence need not be taken into

consideration in the decision of any questions relating either to prognosis or to treatment."

Here the views of the process following the primary tubal rupture which I have advocated explain all the difficulties of the situation. Dezeimeris was the first to discover the fact that there was such a thing as a pregnancy under the pelvic peritoneum, though he neither recognised its frequency nor discovered the process by which it was brought about. But there was no disputing Dezeimeris' facts, for almost as soon as they were published they were confirmed. As late as 1842 Campbell disputed them, and brought forward the familiar "encystment theory" as an alternative explanation. "In the *sous-peritoneo-pelvic*, or second variety of Dezeimeris," Campbell says, "it is difficult to comprehend how the ovum can insinuate itself under the peritoneum, which is reflected over the organs situated in the brim of the pelvis. Through time, certainly, the connections of the original cyst with the adjacent parts become so numerous that when superficially considered the ovum may seem to be enveloped by the layers of the broad ligament; but how it can pass under this appendage it is impossible to conceive." But the explanation is now before us, and Dezeimeris' facts have been confirmed by every unprejudiced observer.

As we have from this point to deal exclusively with cases in which the direction of rupture has been into the cavity of the broad ligament, I must ask to be excused further reiteration of the fact, and it must at the same time be taken for granted that when I speak of effusion of blood in connection with these cases, I mean effusion into the broad ligament only—extra-peritoneal hæmatocele. The only exception to this will be when I speak of *secondary* rupture, by which I mean rupture of the broad ligament, distended as the result of the primary rupture and its resulting hæmorrhage, as in Nonat's case (p. 32), or in the case just alluded to as so misunderstood by Matthews Duncan. This secondary rupture must, if it cause hæmorrhage at all, pour the blood into the peritoneal cavity, and thus produce intra-peritoneal hæmatocele. If, when the rupture takes place into the broad ligament, the blood effusion should be considerable, it is not difficult to understand that the ovum will frequently be killed at once, and be absorbed in time, as the blood itself is. The whole thing will disappear, and the patient will get well, and I have no doubt that this is the origin of many of the inexplicable hæmatoceles of the broad ligament which we meet with. I have already given a case of the kind proved by abdominal section. I have as little doubt that in this way very many cases of ectopic gestation have a fortunate ending.

But they do not all die in this way, and many of them go on developing in their new position, and their development may go

to the full time. On the other hand, the death of the ovum may occur at any time up to the full period, and then a change, which I believe to be perfectly uniform, goes on slowly. The first part of this process is that the liquor amnii is absorbed, and then the soft parts of the foetus and the bones are also, as far as they can be. At the end we have a small cyst in the broad ligament, containing foetal bones and debris of foetal tissue. From the record of numberless cases in the literature of this subject it is certain that ultimately most of these cysts begin to suppurate, and cause much suffering. Some of them we know remain quiescent, and are found as lithopædia, little and big, on the post-mortem table. Parry knew this, and expresses the fact well when he says that "if the woman does not perish from rupture of the cyst during the first four or four-and-a-half months of gestation, it is not likely that an opportunity will offer to inspect the body until at or near, or even some time after, the close of pregnancy." But as he did not recognise the process of rupture into the broad ligament, he failed to understand the position, and his clinical accuracy suffers accordingly, whilst his subsequent pathological speculations are full of error. Thus, he continues his guesses about "encystment," though he has himself given the most conclusive argument against it—that the encysting process of inflammation is extremely rare; personally, I doubt if it occurs at all. He says, "Though the presence of an encysted foetus is not incompatible with life, and even with comfort and usefulness, the woman who bears such a burden within her is in constant danger of the cyst taking on inflammatory action, which will greatly endanger and may even destroy her."

When the bone-containing cyst suppurates, the matter seeks an exit, and that is found uniformly in one of four directions: through the rectum, by far the most common; through the posterior vaginal cul-de-sac, the next in frequency; through the bladder; and, most rarely, through the abdominal wall at the umbilicus. "During the discharge of the decomposed child," says Parry, "the mother is subjected to all the dangers which result from the absorption of purulent and putrid matter;" and he gives a table which, though it has no absolute value, is immensely suggestive of the terrible mortality of this process. He has tabulated 330 cases, and of these 105 died, and we may feel quite sure that, as in all such reckonings, this is an understatement of the true death-rate, as we never hear so much of unsuccessful cases as of those that have a satisfactory ending. The cures involve a great amount of suffering, for they go on for years, and therefore deserve the surgical interference for which I shall afterwards advance arguments.

But, first of all, let me say that the four directions in which the debris is evacuated prove clearly that its seat is the cavity of

the broad ligament. If the seat of the trouble were the left broad ligament, and the effusion had dissected the peritoneum up from the rectum in forming the annular stricture of which I have spoken, it is into the rectum that the abscess would most likely lead. I have seen a number of these cases, and have removed foetal debris through a hole in the rectum, opening straight into the cavity of the broad ligament; and, with my finger in the aperture and a sound in the uterus, I have proved the site. The bladder and posterior flexure of the vagina would naturally expect to be the next most available seats of evacuation, and in the case of the latter opening I have again proved, as in the case of a rectal aperture, that the cavity of the broad ligament was the seat of the debris cavity. Finally, in the case of a lady who came to me from South America, and who for years had been passing phosphatic calculi from the bladder, the nuclei of which were foetal vertebrae (the bodies of them), I opened the abscess cavity from above, without opening the peritoneum, cleared out a quantity of pus, foetal hair, phosphatic deposit, and foetal bones, and promptly cured her. I could pass my finger into the bladder by a hole in its right wall, and as the uterus was quite fixed in situ, there was no doubt that the abscess was the result of the death of an ovum which had been extruded into the right broad ligament.

The exit of the products of the foetal decomposition at the umbilicus was not intelligible to me till I saw the marvellous frozen sections, made by Berry Hart, of a cadaver in which he found a well-advanced broad-ligament pregnancy. Then this and the many other riddles were cleared up; but these had all better wait till I speak of the relations of the peritoneum as altered by the growth of a broad-ligament pregnancy.

Let me speak of the abscesses opening by rectum, vagina, and bladder more in detail.

In all of these the history helps but little, for the story is seldom more than that of obscure pelvic trouble, ending in an abscess bursting and continuously discharging into the rectum; and it is not till the arrest of some sharp spicula of foetal bone in the anus declares the true solution that the nature of the case is discovered. Most of these women suffer severely till the abscess bursts, and then they are able to get about at times, though on the whole they lead invalid lives. The mortality is doubtless quite what it is asserted by Parry, though I never saw a fatal case. All that have come under my own care have been easily cured by the complete emptying of the sac.

The cases where the abscess has burst through the vagina have histories very much as in the former case, and they certainly suffer less, and the cure is easier still. Quite lately a woman came to my out-patient department with the remains of a foetal

femur sticking out of a hole just behind the cervix, and to the left. I enlarged the opening, took out two or three teaspoonfuls of debris, and she was cured within a month. Parry tells us that under exceptional circumstances the contents of extra-uterine foetal cavities may make their way to the surface by a fistula through the perineum, and he quoted Dr. Yardley, of Philadelphia, as having recorded an observation of this kind. Such an occurrence would clearly form only an extension of their method of extrusion by the vagina, the walls of the vagina and bladder being separated by the advancing abscess, and the opening taking place as low down as it could in the perineum.

In the cases where the discharge is into the bladder the story is very different. Parry says it is much more fatal than discharge in other directions; and I think this is very likely, for in addition to the pelvic abscess we have the very serious complication of cystitis, leading to pyelitis and abscess of the kidney—a complication I certainly have not seen, but one which is, on *a priori* grounds, very probable. But the mere sufferings of the patient, greatly enhanced by the formation of phosphatic concretions, would alone be enough to increase the mortality.

Curiously enough, I have never yet seen one of these cases in its early stage, though I have for long expected to come across them, because it has been my habit for years to deal with all pelvic suppuration by abdominal section. By this method I get results far more rapid, complete, and permanent than in any other way; and doubtless some day I shall have the experience of opening a suppurating foetal cyst before it has made its external opening. As I have said, I have opened one from above after it had already made its own way into the bladder, and with a brilliant result, for the patient was cured at once after years of suffering. But the case does not reckon as one of abdominal section, as I did not open the peritoneum; and by the definition I have adopted, and have illustrated and defended elsewhere, this is necessary to constitute an abdominal section.

I feel quite confident that if these cases were dealt with by opening from above in their earlier stages, much of their mortality would disappear, and the patients would be spared years of suffering. I would treat them as I do pelvic abscesses, and if the peritoneum were opened I should close it in my usual fashion, by stitching the opening in the walls of the cavity of the broad ligament to the opening in the parietal peritoneum (see Pelvic Abscess), after emptying the decomposing debris and cleaning out the cavity. I have now done over fifty operations of this nature, and not only has there been no mortality, but the cures have been so rapid, complete, and permanent as to give me perhaps more satisfaction than almost any other class of my work. I have said nothing about the differential diagnosis of broad-ligament abscesses

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originating in the deaths of ectopic ova, because I hardly think it possible till bones are found in the discharges, and then of course it is easy enough. Before this has happened I have had no experience of them, as I have said. When I do have, I shall certainly not trouble about the differential diagnosis, and the want of it will certainly not delay my interference for an hour, for my rule is to get pus out of the pelvis as soon as I am satisfied it is there.

The death of the foetus may occur, as I have said, up to any time of foetal life, and if suppuration of the foetal cavity occurs there can be but little variation in the processes, or in the proceedings required for their relief. Of course the larger the foetus the greater the trouble, the more urgent the need for interference; and the larger the foetus the greater the possibility of the sac bursting at the umbilicus, an accident to be afterwards discussed.

Now we come to the later stage, and the last division of my subject—the minority of cases where the ovum survives and grows towards the full time.

During this process of growth the secondary rupture of the broad ligament sac may take place, and prove fatal, as in the cases recorded by Nonat, Bernutz, and Mathews Duncan. Such an accident would give rise to alarming symptoms, similar to those observed in primary rupture, and, so far as we know from a few recorded cases, the accident would be quite as fatal. One case of such a rupture has been recorded which was not fatal, and in which the child was removed; and it forms an instance perfectly unique in the history of ectopic pregnancy, for the child was absolutely free in the peritoneal cavity, not encapsulated by cyst. Mr. T. R. Jessop, who records the case, puts it among what he calls, quoting the text-books, the “abdominal variety.” If he had said “intra-peritoneal variety” his language would have been more accurate, but as a matter of fact it stands by itself, and may therefore be known as *the* case of intra-peritoneal ectopic gestation. Fortunately no post-mortem was necessary, but it is perfectly clear from the history that about the tenth week she had a “rupture,” and that this was tubal is, in my belief, quite certain. If the pregnancy had ruptured its way into the peritoneum it would have been at once digested; for I am certain, from what I know of the digesting powers of the abdomen, no gelatinous foetus of the tenth week could resist them. I interpret this case, then, to be one where a broad-ligament pregnancy on the right side went on till the seventh or eighth month, and that then a secondary rupture of the broad ligament cyst took place, the child escaped into the peritoneal cavity, and continued its life amongst the intestines, its tissues having arrived at a period of development by that time which enabled them to resist the efforts of digestion which doubtless would be directed towards them. The ruptured cyst

would contract and disappear towards its edges, and the placenta was found where it is found in the great bulk of broad ligament cysts, plastered over the pelvic contents.

The following is an abstract of the case :—"M. C., aged 26, has enjoyed fair average health up to the commencement of the illness. In March, 1869, she gave birth to an only child, after a labour in all respects natural, and, having weaned the child, she menstruated with moderate regularity up to 1874. From the beginning of January, 1875, her menstruation ceased, and she believed herself to be in the family way; early in March she was about two months pregnant. Whilst washing she was suddenly seized with violent pain in the right side of the belly, which caused her to faint. She was taken to bed, and her ordinary medical attendant was sent for. She was suffering from violent pain in the abdomen, with swelling, vomiting, retention of urine, and high pulse, and for two months she was confined to bed, suffering from abdominal pain, sickness, and loss of appetite. Towards the middle of May she began to feel the movements of a child, and at the same time noticed a hard swelling in the lower part of the abdomen, towards the right side. On the 13th August Mr. Samuel Hey and Mr. Clayton, in consultation, determined the existence of an extra-uterine living fœtus, and she was taken to the Leeds Infirmary, under Mr. Jessop, the same day. The abdomen was throughout distended. At the umbilicus and below was a large rounded prominence, which gradually sloped off towards the ensiform cartilage, and terminated inferiorly somewhat abruptly in a hollow, which was bounded again by a lesser prominence immediately above the pubes. On a closer examination the umbilical prominence presented the characters of a child's breech; the cleft and the two buttocks were distinctly traceable through the thin abdominal walls, and extending upwards in a straight line towards the sternum the little prominences of the vertebral spinal processes were plainly perceptible. Above the pubes two feet could be made out, and above the umbilicus, immediately below the ribs, it was not difficult to map out the outlines of the two scapulae. The rapid beating of the fœtal heart could be most distinctly heard towards the right side above the umbilicus. The breasts were enlarged and the areolæ were fairly developed.

"On examination, per vaginam, the uterus felt somewhat enlarged, and on measurement by Simpson's sound its cavity was found to be $2\frac{1}{2}$ inches in length. The uterus remained motionless, whilst the abdominal contents were swayed from side to side. On several occasions the movements of the child were plainly visible, and indicated considerable vigour. After repeated careful search we were unable to satisfy ourselves of the presence of a placental souffle. The diagnosis of extra-uterine gestation seemed complete. The woman's condition was becoming extremely critical. Under

these circumstances it was decided to remove the child by abdominal section. With the full concurrence of my colleagues, I accordingly proceeded to perform the operation at 12.30 on the morning of the 14th of August.

"The patient having been placed under the influence of ether, and the bladder emptied of urine, an incision six inches long was made through the linea alba, with the umbilicus at its centre. The abdominal wall was unusually thin, but more vascular than common; and the peritoneal lining, though natural on its free surface, appeared thick and velvety on section. Immediately upon the completion of the incision the breech and back of the child, thickly coated with *vernix caseosa*, came directly into view. At the upper part of the wound the omentum was seen lying like a cape upon the child's shoulders, and inferiorly the funis, of natural appearance, passed transversely across the wound, and was traced round the external aspect of the left thigh of the foetus to its attachment at the umbilicus. The child was in a kneeling position, its breech presenting towards the mother's navel; its head, folded upon its chest, buried beneath the omentum and transverse colon; the soles of its feet pointing towards the pubes, and its knees resting upon the posterior brim of the pelvis. . . . Its removal was readily effected. The funis was tied and separated in the usual manner, and the child was handed over to the custody of two gentlemen previously appointed to look after its well-being. . . . It was now seen that the gestation had been of the 'abdominal' variety; no trace of cyst or of membrane could be found. The child had lodged in the midst of the bowels, free in the cavity of the abdomen. A few bands of unorganised lymph of a very friable nature lying upon, but not adherent to, intestines were readily removed by sponging, and about an ounce of a clear serum was found in the peritoneal cavity. On tracing the umbilical cord, the placenta, having a larger superficial area than natural, was seen covering the inlet of the pelvis, like the lid of a pot, and extending some distance posteriorly above the brim, where it apparently had an attachment to the large bowel and posterior abdominal wall. Near its centre was a round prominence, which seemed to correspond with the swollen fundus of the uterus beneath. Great and especial care was taken not to cause the smallest disturbance to its connections. The placenta was indeed left untouched. On the 29th of October the wound is reported as quite healed; and three weeks later she returned to her home. From that time to the present she has kept in good health.

"Menstruation commenced about a month after she left the infirmary, and has recurred at regular periods ever since. The child was as healthy, vigorous, and large as an average child born in the natural way; and it continued to thrive well

until July, 1876, when, after a week's illness, it died of croup and inflammation of the lungs, at the age of eleven months."

I have placed this case by itself, because it is the only one of its kind, and the only one which, after critical investigation, will admit of being termed "abdominal" or intra-peritoneal pregnancy. Certainly those quoted by Parry will not do so, and I have met with no others.

Another somewhat similar case is published in the *Die Krankheiten der Frauen*, by L. Bandl, and is to be found in Tarnier and Budin's book, and is as follows:—"In the case reported by this last author, in a multipara examined several times, he diagnosed extra-uterine pregnancy. The child was living, and arrived at full time. The patient refused gastrotomy; phenomena of false labour, and expulsion of the decidua occurred, and some symptoms of peritonitis having supervened, she succumbed. He immediately performed laparotomy; the child, who weighed 3,800 grammes, was extracted alive, but it only breathed three times and died. The following day, at the autopsy on the mother, they found in the abdominal cavity about 2,500 grammes of thick fluid, but nowhere could they discover the fetal membranes. There existed, however, a pocket which enclosed the fetus on all sides, but the walls of this pocket were formed by false membranes about four or five millimetres thick, and which hid the anterior, posterior, and lateral abdominal walls, the small intestines, the ascending colon, the descending colon, etc. On the internal surface of the pouch were a certain number of threads, some thick and some thin, which extended from one wall to the other. A mass which comprised the placenta in its thickness lay in part on the internal iliac fossa, and penetrated into the little basin on the right side. Some very dilated vessels, being the size of a raven's quill, were very close to this placenta. The umbilical cord, part of the fetus, formed a handle round the uterus, and penetrated by a circular orifice, which was a centimeter and a half in diameter, into a cavity of which the walls were smooth; the fetal surface of the placenta lined this cavity, into which the finger could easily penetrate. Outside the opening round the cord were prominences of wrinkled ovular membranes of a yellow-brown colour, and dating from the first months of the pregnancy. Here the evidence of the remains of the broad-ligament cyst clearly point to the occurrence of secondary rupture."

Under the circumstances of Jessop's case nothing could have been easier than the diagnosis, though there is one source of error which I have met with several times, and no authority, Parry excepted, makes any allusion to it, so far as I know. At page 103 he says:—"I met with an example of thinning of the abdominal walls a few years since which was exceedingly puzzling. I was asked by Dr. E. W. Watson to see a young woman, to decide

the nature of an abdominal tumour, which was the size of a seven and a half or eight months' gravid uterus. Upon making pressure upon the enlarged abdomen a foetus was felt receding from beneath the finger, against which it immediately rebounded. It was so superficial in its situation that it appeared impossible to believe that there was anything more than the skin of the abdominal wall interposed between the fingers and the child."

It is clear that in such a condition we must have not only a "thinning of the abdominal walls," but a want of development of the uterine tissue; and a few cases in which this arrest of development was so remarkable that the walls were no thicker than a single fold of a towel, forms a part of the curiosities of my experience. In one case in the practice of Mr. Langley Browne, of West Bromwich, we found a very thin uterus extremely retroverted. In the others the conditions were those of extremely thin walls, with some kind of displacement, as latero-flexion or retroflexion, and in these patience always solved the doubts. If I met with a case where any urgent symptoms existed, I would not hesitate to use the sound or use my dilators if necessary; for the worst that could happen, in the event of mistake, would be a premature labour.

This condition of extreme thinness of the uterine walls, in a pregnancy perfectly normal in every other respect, is a point which has not yet received the notice it deserves. It is, however, of sufficiently common occurrence to be a source of difficulty and danger, and therefore I propose to say here what I have noticed about it, in the hope that it may draw the attention of someone engaged in obstetric practice who may be able to investigate it more fully. I can now recall eight cases in which I have been consulted concerning a supposed extra-uterine pregnancy, yet in which there was only an extreme thinness of the uterine walls. I have no record of three of the cases, but of the others I have more accurate data than mere recollection. The features of all of them had much in common, and the known histories of four quite establish this. The ordinary symptoms of pregnancy were present in all of them, and in only one was there any doubt as to its existence. The question generally was, Is the child in the abdominal cavity? and sometimes I had great difficulty in persuading the gentlemen who brought the patients to me that the position of the child was normal. Save in one case—that seen by me with Dr. Whitwell, at Shrewsbury—there was a marked absence of the liquor amnii, so that the movements of the child could be seen and felt in a most striking manner. In the pelvis the finger came upon the presenting part of the foetus, as if it lay immediately under the mucous membrane; and it was only on very careful investigation that the attenuated cervix uteri could be made out, spread over the body of the child.

These cases were, with one exception, all under the seventh month. In the eighth and ninth months the walls of the uterus thickened, the quantity of liquor amnii increased, and the cases terminated in perfectly natural labours. The exceptional case I have seen within the last few days, and the pregnancy had advanced well into the eighth month. Vaginal examination makes it quite clear that the pregnancy was intra-uterine, whilst from the appearance of the abdomen alone the conclusion would have been inevitable that the child lay amongst the intestines.

These facts were given to me in connection with Mr. Langley Browne's case, also with a case which was watched by Dr. Hill Norris, and attended by him in her confinement. In Dr. Whitwell's case there was a large, thin-walled cyst, through which the child could be felt with the most astonishing distinctness, and it floated about as if it were perfectly free in the abdomen. He wrote to me afterwards that "the patient went on very well; that some time before the expiry of gestation the fœtus became much more a fixed body, which undoubtedly showed an increased thickening of the walls of the uterus, as well as enlargement of the fœtus; and that her labour was quick and without any subsequent hemorrhage."

The other conditions with which extra-uterine pregnancy may be confused, before the death of the child, are (*a*) displacement of the normally pregnant uterus during the early months of pregnancy, complicated with fibro-myoma or cystic disease of the uterus; and, more rarely, (*b*) pregnancy of one-half of a double uterus. In a case which I saw with the late Mr. Ross, of Wakefield, I diagnosed either extra-uterine gestation or a double uterus with pregnancy of one side; and it turned out to be the latter. Frequently we have considerable lateral displacements of the normally pregnant uterus, especially in unmarried women, sent to the specialist as something very different to what they really are.

But it is in cases seen after the death of the child, or at least when the time of the expected confinement has passed so long that if there is a child it is sure to be dead, that our most serious difficulties in diagnosis are met with.

The first point to consider is the history given by the patient of her supposed pregnancy, and the events which occurred at and after the time of her expected delivery. It is somewhat remarkable, and I think it is in favour of the views of the pathology of tubal pregnancy which I have advanced, that the majority of the instances of this abnormality occur in women who have not borne children previously, or in those who have had no children for many years. This point in the history of the patient is therefore always noteworthy. The other matters requiring careful consideration are the sudden arrest of the menses, the gradual increase in size, the occurrence of symptoms of labour at or about the end of

the ninth month, *and the subsequent diminution in size.* Of all those points, the last is the only one having the importance of a sign; but it must always be borne in mind that no history, however complete, is of sufficient weight to establish a diagnosis unless there be some distinct physical signs in support of it. This I lay down as a rule based upon a remarkable experience, which I published in detail in the "Transactions of the Obstetrical Society of London" for 1874. In this case I had diagnosed double ovarian tumour, but was completely misled by a subsequent history which the patient volunteered. This was to the effect that just three years before she had believed herself pregnant, because her menstruation had ceased for eight months, her abdomen had slowly enlarged, and so had also her breasts. She was also quite sure that she had often felt movements, and, indeed, had all the feelings that she had experienced in each of her seven pregnancies. One day, when walking in the street, she was seized with pains exactly like labour pains, and these lasted for four hours. At these pains she felt no surprise, fully believing that she was in labour. She felt as if a child was about to pass from her, and was aware of the "swelling pressing downward." She afterward felt this "pass back into the belly," the pains ceased, and her size remained unaltered. At this false labour there was no discharge. Up to the time when I first saw her she is quite certain no diminution of her size had ever occurred, and that there had been very little increase, if any.

The physical signs of the case were those of multilocular disease of both ovaries, and on them I need not dwell. I found it was so when I operated, and the operation was successful. The lesson of the case is that we should place very little confidence in the statements of patients, if they are not in harmony with physical signs. I must plead in extenuation, that I never saw a woman farther removed from any taint of hysteria, and, being an illiterate woman, there could have been no cramming up of symptoms from books. The strongest points in her story were the arrest of menstruation for eight months, and the very complete narration of the phenomena of labour, and on these points I had corroboration of her statement.

This singular imitation of the process of labour is a striking feature in most of the cases in which an ectopic gestation is carried beyond the normal period, and seems thus to indicate the conclusion that the initial mechanism of labour is not in the uterus, as generally supposed. It was first noticed in 1652 (Phil. Trans., Vol. V.) by Vassal, and has been constantly alluded to by writers recording such cases; one case being given in the Memoirs of the Medical Society of London in 1789, where the spurious labour went on eight days, and then abdominal section was performed. The child was dead, and, as the placenta was

unfortunately removed at the same time, the patient died in four hours. Campbell gives a great deal of curious information on this point* as on others, and he especially emphasises the records of cases where there has been a "show" and separation of secundines. It is also worthy of note that he gives a long list of records where it is especially noted that up to the occurrence of the false labour no trouble of any kind was encountered by which the patient was led to suspect that there was anything wrong. The gestation in the case which I am now discussing, which led me astray as much as anything was the suppression of menstruation, and the digest of the records made by Campbell on this point is worth quoting at length to show how little trust can be placed in histories. "In many instances of the different varieties of misplaced gestation the catamenia are suspended; frequently, however, they appear regularly in each of the early months; in some cases they flow at uncertain periods, and in other examples they are either profuse or limited in quantity. In many cases, at an uncertain period of gestation, we have hæmorrhage, uterine effusions, the extrusion of coagula, of bodies which resemble moles, or portions of the placenta. These appearances have occasionally led to the belief that the patient has actually aborted, so that the ovum was originally not extra- but intra-uterine, and had escaped through a rent in the uterus into the peritoneal cavity, the extruded body in either case being viewed as the placenta. Cases attended with much uterine excitement, whether arising from unusual exertion or some external injury, are the most likely to be accompanied by these latter phenomena." (p. 104.)

The weak points in the story of my case were those I did not attach sufficient weight to, and they were those alone on which we ought to place any reliance whatever. They are that she had no "show" during the false labour, and that her size did not diminish after it. Having now almost exhausted, I believe, the literature of the subject, I am satisfied that these two circumstances are invariable in extra-uterine gestation which has gone past the period. The first is due to the general excitement and congestion of the organs involved, specially to the enlargement of the uterus, which is always present to some extent; and the second, to the absorption of the liquor amnii after the death of the child. The complete arrest of menstruation during the period corresponding to normal pregnancy is far from being a constant condition. But even though it were, like its accompanying signs, such as

* For once, p. 120 Campbell indulges in a piece of criticism based on a wholesome scepticism concerning the utterance of "a veteran practitioner," who I suspect was Hamilton. He says:—"Those of the profession who have been led to bestow some share of attention on the subject under consideration will excuse me from entering my dissent against the dictum of a late veteran practitioner, who imagined that there was something so characteristic in the mere means of the patient, that it would be sufficient for the medical attendant to hear them once to enable him to pronounce any future case to be one of a certain variety of extra-uterine gestation."

enlargement of the breasts, darkening of the areolæ, increase of Montgomery's tubercles, malaise, vomiting, etc., it would help us to do little more than suspect a pregnancy. Sometimes there is metrorrhagia, due to the large size and empty condition of the uterus—a symptom which would incline us to the diagnosis of uterine myoma. Parry has fully investigated this point in the numerous records he has collected, and tells us that “the uterus, except in some rare instances, undergoes striking alterations, both in its structure and volume. Its development has been found to vary from twice the size of an unimpregnated organ to the volume which it is known to attain when gestation is four months advanced.”

After the death of the child, auscultatory signs cannot, of course, be made available; though in one of my cases, where the child was clearly dead, the placental sound was heard at my first visit, but had disappeared entirely at my second, ten hours afterwards—a set of signs which tended to confirm my diagnosis.

The invariable condition of the uterus in extra-uterine pregnancy, whether before or after the death of the child, is that it is intimately associated with the tumour, generally in front of it, movable to a limited extent, always enlarged before the death of the child, and remaining so afterwards if the placenta be attached, as it generally is, to the posterior surface of the fundus. The most important point is that the cervix is always quite open—in my cases almost admitting the finger. Under such circumstances, if a foetal heart is audible, the case is clear. If not, then the character of the tumour must be taken carefully into account. If the case is seen soon after the death of the child, the tumour will be soft, more or less obscure ballottement will be felt in it, and possibly a part of the child may be made out by rectal, vaginal, or supra-pelvic examination. It is at this stage the great difficulties in diagnosis are met with, and Parry has so well summed this up that I cannot do better than reproduce what he has said on the subject:—

“If the patient is not seen until after the death of the child, the diagnosis of an extra-uterine pregnancy may be very difficult. Many years may have intervened before the woman comes under notice. Of course, if the cyst has opened into the bladder, bowels, or vagina, or a fistula has formed through the abdominal walls, there will be little or no trouble in arriving at a correct conclusion. Difficulty will arise only when the cyst has not ruptured, or, having opened into the bladder or into the rectum out of reach, it has not discharged any of its solid contents. Under these circumstances, a correct conclusion can be reached by carefully sifting the clinical history. No point is too minute for examination. As a rule, it will be found that all such women have a firm conviction that they were pregnant when the abdominal tumour

made its appearance. Though more than a score of years may have passed, they will not have abandoned the idea that they still carry a child somewhere in the abdominal cavity. Such women will nearly always give the history of labour at or near term, attended with uterine hæmorrhage, and followed by the secretion of milk; after which they will assert that the abdomen diminished in size, and that this diminution steadily continued until the tumour reached the dimensions presented when the patient comes under observation. This association of phenomena is very characteristic, and when they are all present, erratic gestation should always be suspected. The diminution in the size of the abdomen after labour is a most important symptom."

After the absorption of the liquor amnii the character of the tumour in extra-uterine pregnancy alters very much. The uterus may become smaller and more mobile, and parts of the child may be felt, especially in the rectum, such a sign at once pointing out the nature of the case. These prominences, and likewise the "bosselures," or knobs of the hands and feet, which are often felt above the pelvis, may be closely imitated by the small nut-like cysts of small ovarian tumours, and especially by the hard irregularities of dermoid cysts. These resemblances existed in the case I have narrated above to a considerable extent, but to a very much more marked degree in another patient, where I removed both ovaries—one dermoid—but where the resemblances, fortunately, did not lead me astray. If the cyst be packed down in the pelvis, the deception may be great, and nothing but an exploratory incision will clear up the case. I would strongly recommend that, in such cases, the aspirator should not be used. In a joint, or in the pleura, where the conditions between which diagnosis has to be made are limited in number, this instrument is doubtless of great use, as it is for treatment as well. But in the abdomen and pelvis it is very different. The aspirator may tell you a tumour contains serum, blood, or pus, but that helps you but little as to the seat of the disease, and nothing at all as to its treatment. Besides, the risk of the aspirator is great—quite as great as the risk of an abdominal section. The use of the aspirator in my special line of practice is therefore diminishing, has almost disappeared, and in all cases of abdominal tumour where there seems a reasonable prospect of doing good to the patient, I open the abdomen and make out the condition. I have never had to regret this practice, and I very often have had reason to be pleased with its results. Parry's evidence on this point is so strong and important that I quote it at length to strengthen my position:—

"In cases of doubt, the fœtus being dead, the trocar has been used to draw off some liquor amnii in order to confirm the diagnosis. Unless it has been decided to operate immediately for

the removal of the foetus, the use of the trocar is utterly unjustifiable. A few, but very few women have long survived its use. Mr. Jonathan Hutchinson, in a clinical lecture upon this subject, says that this practice 'is in itself attended by great danger, nor shall I deal honestly with you or myself if I do not candidly admit that, with due care and patience, I do not think that paracentesis ought to be necessary in a case of foetal tumour simulating ovarian dropsy.' Mr. Hutchinson reached this conclusion after having been so unfortunate as to see fatal peritonitis follow the use of the trocar in his hands. Dr. Cardeza's patient was tapped after consultation with Dr. W. L. Atlee, of Philadelphia, on November 19th, and the latter gentleman performed gastrotomy five days later. As soon as the cyst was opened, 'there was a rush of offensive gas.' Jordan used the aspirator for diagnostic purposes, the woman, there is every reason to believe, having no bad symptom at the time. She was given chloroform, the puncture made, and two hours after 'complete collapse came on.' Speaking of the use of the aspirator under these circumstances, Dr. Jordan remarks: 'The doubts cast on my diagnosis, and the variety of opposing views in regard to the nature of the case, which unfortunately resulted in the use of the aspirator, were nearly the cause of the patient's death.'

Slow-growing cancer of an ovary, or in the neighbourhood of the uterus, especially behind it, might be difficult to diagnose by physical signs from extra-uterine pregnancy of long standing, but the history would here greatly help us. The increase would probably be steady, and if a rapid accession to the growth took place, a temperature chart would settle the difficulty; for the only condition which could induce rapid increase of the cyst of an extra-uterine pregnancy is suppuration, and this would tell its story on the chart in lines that could not be mistaken. The history of the case would probably help, but it might just as easily lead one astray, as in the case I have detailed. I once saw a very eminent obstetric physician attack an abdominal tumour which, from the history mainly, he had assured himself was an instance of ectopic gestation gone beyond the full time. He asked me to examine the case and give an opinion, but as the physical signs were in no way distinctive from those of a large uterine tumour, certainly not myomatous, I said I should depend more upon the exploratory incision than upon the history. The event proved that the history was entirely fallacious, for the tumour was a mass of cancer of the omentum, adherent to and involving everything.

After the liquor amnii has been absorbed, and the contents of the ovum cyst consolidated, the relations of the mass to the uterus and the other pelvic viscera are made so close by the placental connections that the physical signs never can be very clear, and therefore alternative diagnosis of fibrocystic tumour of

the uterus must be the refuge of uncertainty.* But an exploratory incision will clear up all doubt as to the diagnosis, and at the same time it will put the operator on the road to the proper method of treatment.

After the diagnosis of a case of extra-uterine pregnancy has been satisfactorily determined, the question arises, What is to be done with it? If the child is still alive and near the full term, I believe it to be our duty to operate. If the child is dead, the propriety of operating seems to me quite evident, though it has been disputed by so eminent an authority as Mr. Jonathan Hutchinson. Of course no strict rule can be laid down, and each case must be decided on its own merits: but the records of surgery are so full of instances of the risks which such cases have to run when suppuration of the sac occurs, as it almost always does some time or other, that I think we are in most instances justified in operating. Moreover, the surgical principles on which the operation is to be conducted are now so well established, and its results are so good, that the opponents of the operation seem to me to be in a very illogical position if they still continue to advocate certain other surgical proceedings of which the results are notoriously bad.

Of late years much discussion has turned on various forms of treatment designed to obviate the necessity for surgical operations, and in the arguments used to support them an altogether new and, I venture to think, a very immoral element has been introduced. It is to the effect that if the child is alive the proper thing is to kill it, in the belief that the infant's sacrifice is the mother's safety. I am no theologian, and this is hardly the place for a discussion on morals, but I am bound to say that this seems a most mysterious kind of belief, and it would put legitimate practitioners of medicine quite on a level with abortion-mongers and reckless craniotomists. Certainly I will have none of it, the more that the men who urge it happen, commonly enough, to be notoriously unfortunate in all their surgical efforts, belonging generally to the hybrid class of obstetric physicians.

If the death of the child did bring the mother safety, something might be said for the proceeding, but nature kills the child in the vast majority of instances of ectopic gestation, as we have seen, and safety is thereby brought to a mere fraction of the cases, as Parry

* Writers of "library papers" and other inexperienced persons talk so lightly of diagnosis in pelvic and abdominal troubles, and so assuredly of the accuracy of their diagnosis, that I am disposed to ask those who are passing through those stages of their professional existence to read the following extracts on the subject of the diagnosis of ectopic gestation:—

"Although, from the careful perusal of numerous histories of cases of this nature, some degree of facility of distinguishing their presence may be acquired after a certain period of their duration, and of deciding even, in occasional instances, on the particular variety of such pregnancies, yet assuredly every practitioner who has attentively studied the subject must admit the distinction to be a task of no ordinary difficulty.—*Parry*

"Telle est l'obscurité du diagnostic, après l'exploration du col utérin, que les Baudeloque, les Oslander, les Dubois, etc., n'ont jamais osé, au milieu des incertitudes qu'il laisse, entreprendre, au terme de neuf mois, l'extraction de l'enfant. *Archives Gener.*, Vol. xxvii, p. 211."—*Lesouef*.

has proved. Puncturing the ovum sac with needles, medicated or galvanic, is therefore an immoral and dangerous proceeding, which ought to have professional condemnation. Parry is of opinion that all measures that necessitate wounding the cyst without removing the child are not without danger to the woman, and that the question to determine is whether the risks of such a therapeutic measure, though they may be grave, may not be less than those which follow when the accident is abandoned to nature. This is a fair way of stating the case; certainly at the time Parry wrote (1874) it was a very advanced kind of statement, but now we can speak with far greater certainty. He himself says in this very passage that future experience must settle the question. I venture to think that my own experience settles the question in favour of surgical interference in ectopic gestation at the time of primary rupture. I think there is no appeal against the decision to cut down and tie the bleeding-point. No acupuncture, simple or medicated, and no electrolytic charlatanism will save a woman who has a vessel bleeding into the peritoneal cavity. If the child survives that rupture it has a legal and a moral right to its life, and ought not to be deliberately killed, as has been done by Dr. Braxton Hicks and Dr. Aveling. Parry says of this case, narrated by the former authority:—

“The observation of Dr. Hicks is more important, since it involves less speculation. This case has already been alluded to. The patient died, when four months pregnant, of internal hemorrhage, the result of an attempt to destroy the fœtus by puncturing it with a trocar. About a fortnight before her death she had some symptoms of rupture, but these were not distinctive. At the post-mortem the cyst, which had originally contained the ovum, was found ruptured; and outside of it, having formed new connections, was the perfect ovum with its placental attachments, on the side opposite the opening into the cyst and to the posterior surface of the uterus.”

In Dr. Aveling's case both mother and child had survived the primary rupture, and the ovum was going on developing in the broad ligament. Beyond the fact that an ectopic gestation was diagnosed by Dr. Aveling, and was even made clear by him to Mr. Spencer Wells, there was no reason apparent for interfering. If the case had been carefully tended up to the viable period a living child might have been removed. Instead of this the child was killed by galvanism, and that seems to me a wrong thing—a far more immoral thing even than “spaying.”

One of the most recent cases in which electricity has been used for the purpose of dealing with an ectopic gestation is that reported by Dr. Buckmaster, of Brooklyn, in the *Medical News*, July 21st, 1888, and this case is so characteristic that it may serve as a type against which criticism can be easily and justly directed.

Dr. Buckmaster asks three questions in connection with his case, of which the first is: "Was the diagnosis of extra-uterine pregnancy warrantable?" and in reply there can be no doubt at all, for the description that he gives of the accident which occurred to the patient about the ninth week of pregnancy is essentially characteristic of tubal rupture—"She suddenly felt a violent pain in the 'pit of the stomach,' heard a ringing noise in the ears, and fainted. She lay on the floor groaning, and did not have strength enough to call loudly for assistance. She was found in this condition by her husband, and removed to her bed. It is said that her face was very pale, and she fainted at each attempt to sit up. She was very thirsty, and 'thought the doctor cruel' in that he did not permit her to drink all the water she desired."

The second question is: "Was the child living when the electricity was first applied?" and then Dr. Buckmaster gives a categorical reply in the affirmative, when really it is a matter open to the greatest suspicion. I think in all probability, from the details of the case given, that the patient was suffering from a hæmatocele of the broad ligament, due to the rupture of the tubal pregnancy to such an extent that the ovum had been destroyed, and that if she had been left alone the absorption of blood would have taken place without the violent influence of the electric current, just as generally follows when the electric current is not applied. Further, he describes the tumour as not only decreasing in size but changing in character, losing its elastic feeling on account of the absorption of the fluid contents. But supposing the child had not died, his third question comes up for discussion: "Is the uninterrupted current the best means for destroying the foetus?" and to this I reply, What right had Dr. Buckmaster to destroy the child at all? There can be no doubt, from the very clear description given, that the pregnancy was in the broad ligament. "An ill-defined mass, elastic to the touch, was distinctly traceable on the right side. Vaginal examination showed that the uterus was crowded forward toward the pubes, and that it was somewhat enlarged and softened. The sac of Douglas was occupied by an elastic mass in which fluctuation could be detected, and which felt not unlike a small ovarian cyst, and seemed to be part of the tumour felt in the right iliac region, from which the uterus appeared free."

After carefully considering the different methods for destroying the foetus, none of which seemed altogether satisfactory, Dr. Buckmaster continued to use the galvanic current uninterruptedly, but he gives no justification whatever for his determination to destroy the child. All the severe symptoms had disappeared, the patient was suffering from nothing but slight discomfort and the unfortunate fact that Dr. Buckmaster had diagnosed an ectopic gestation. If the case had been left

alone a living child might have been the result, for there can be no doubt whatever that it was an extra-peritoneal pregnancy, which, if there really was a living child, would have gone on precisely in the way to be described hereafter. Then, finally, Dr. Buckmaster tells us that three months after the electric treatment the patient still had left a hard mass, which could be felt on making a vaginal examination, and that there was a slight tenderness about it; in fact, the physical condition of the patient was precisely that in which he found her—except that the mass had diminished in size, it still remained there, a source of danger, and in all probability will some day suppurate. Certainly three months is far too short a period on which to base any conclusions for the safety of the treatment, even supposing that he achieved the result which he says he desired in killing the child. My own belief is that he did not do so, for the method which he employed is one which could not by any means be applied with safety to the child, and the strength of the current was not such as is likely to be fatal to anything at all.

In Dr. Buckmaster's papers there are two other points upon which some criticism might be directed. In the first place, he credits Dr. T. G. Thomas with the belief that the electrolytic treatment has these great advantages: if any error of diagnosis has been made, it will do no harm, and if the diagnosis be correct, experience proves it to be sufficient.

My answer to such statements is this: that it is by no means clear from experience which we have had in this method that the electric current is without harm, whether the diagnosis be correct or not, and it is equally without proof that it is sufficient to produce the effect desired. Further, Dr. Buckmaster says on his own account that cases will undoubtedly appear, as the literature of the subject expands, in which, after cutting into the abdomen, it will be found impossible to complete the operation. I say from my own experience that this is absolutely inaccurate, it may be impossible for the immediate operator in certain cases to complete the operation, but the rule ought to be that all such operations should be completed, and any man who has such want of pluck and skill as to stop in the middle of one of them ought not to attempt them. They can all be completed. The second point is that Dr. Buckmaster says that "it has been claimed recently that the placenta continues to grow after the death of the foetus, but as we have seen no corroborative evidence, it is not worth consideration at present."

As I am responsible for having first made a statement that I had seen the placenta growing after the foetus had clearly been dead for some time, let me here draw the attention of Dr. Buckmaster and others to the evidence upon which the statement is based.

In case number six the rupture had occurred apparently in the

tenth or eleventh week of gestation, and the placenta was lying in the midst of a quantity of clots, as a round mass the size of a cricket ball, for the most part in the wall of the tube, for when the tumour was removed the placenta was still adherent to part of its inner surface, and the pelvic mass was intact. On slitting it open, the ovum cavity was found to contain about a dessert-spoonful of liquor amnii, but there was no trace of foetus at all.

As we have very frequent experience of this kind of incident—the growth of a large placenta, embracing a small ovum cavity without any, or with only very slight, trace of a foetus in the so-called uterine “moles”—we have no reason to do other than expect that it will occasionally occur in tubal pregnancy. As a matter of fact, such was the state of matters in this case.

In case 19, when the foetus was found it was only about $2\frac{1}{2}$ inches long, and had evidently been dead for some considerable time, for it was partly digested; whereas the placenta had grown to be quite as large as that of an intra-uterine foetation of four months, and it had been forming adhesions to intestine and omentum, giving rise to recurrent hæmorrhages, for which the operation had ultimately to be performed. Similar appearances occurred also in cases 24, 30, 32, and 37. At the meeting of the Obstetrical Society at which Dr. Champneys read his case, Mr. Thornton gave testimony to the same conclusion, and in the first edition of the “Manual of Gynæcology,” by Hart and Barbour, published in 1882, there is the following evidence on this important question:—“Case of extra-uterine gestation, with death of the foetus, but continued growth of the placenta, which led to fatal hæmorrhage. A. B., æt. 24, had passed two periods without menstruating, and thought herself pregnant; three months ago she began to have irregular hæmorrhages three times a month, and in considerable quantity. The tumour was found in the pelvis, the vagina being compressed against the pubis, the cervix reaching above the brim, and the bladder displaced into the abdomen. The tumour was as large as a uterine pregnancy of $4\frac{1}{2}$ months. After a puncture of the cyst with an aspirator needle the patient died with symptoms of internal hæmorrhage, and on a post-mortem examination, by freezing the pelvis and cutting sections, the uterus was found to be $5\frac{3}{4}$ inches long, the fundus being 5 inches above the symphysis, and the cervix so drawn up that the fornices are obliterated. The gestation sac lay in the pouch of Douglas, and was chiefly occupied by the placenta. The cavity of the amnion contained but little fluid, and the foetus was about the size of a three months’ pregnancy.”

The continued growth of the placenta after the foetus had died had led to fatal hæmorrhage.

In looking over the records of cases which have gone beyond the full period of gestation, I find numerous illustrations which

cannot be other than the growth of the placenta after the death of the child. No emphasis in any case is laid upon this fact, but the descriptions completely establish it. In a case mentioned by the first Mr. Samuel Hey, of Leeds, the patient went over the nine months with a false labour, and the child died. Three months afterwards the mother succumbed from the sufferings involved in the carriage of the ectopic gestation. The child was found to be fully formed, and showed no marks of decomposition. As the child had attained a size so unusual as to weigh nearly two pounds and a half, the cyst was supposed to be the right Fallopian tube, but the description makes it perfectly clear that it was the right broad ligament, together with the tube. The placenta in this case must have grown greatly after the death of the child.

Some of the facts which have been recently recorded in the application of electricity for the treatment of ectopic gestation are positively ghastly, as illustrated in the paper by Dr. Matthews Duncan in the Bartholomew's Hospital Reports for 1883.

Electricity was first tried in the form of an induced current as strong as the faradic coil in a Coxeter's combined battery could give. A carbon disc electrode in connection with the positive pole was placed over the tumour on the left side, and a gum-elastic electrode, with a nickel-plated end, was passed into the vagina towards the left side and connected with the negative pole. A current was alternately passed and withheld during periods of two seconds for about a minute and a half. A continuous current of forty modified Leclanché elements was then passed for a space of six minutes, producing slight vesication of the skin, and a rough dried surface in the vagina. The foetal heart was heard beating the same evening. On the following day two grains of morphia were injected into the amniotic cavity. An hour afterwards the mother began to feel drowsy and her pupils became slightly contracted. It was thought advisable to draw off the liquor amnii, which was done through the abdominal wall by aspiration, eight ounces being removed. The foetal heart still continuing to beat, Dr. Duncan, five days later, injected $\frac{1}{4}$ gr. of morphia into the *body of the fœtus*, to the depth of two inches, at the spot where the foetal heart was heard plainest. The operation was twice repeated at intervals of two days, but without the desired result. It was decided now to try and destroy the fœtus by galvano-puncture. Two insulated electrolysis needles were passed into the tumour for an inch and a half and connected with the negative pole of a battery composed of modified Leclanché elements, a carbon disc-shaped electrode connected with the positive pole being applied over the tumour externally. A current from forty cells of the battery was passed for six minutes with occasional interruptions. After the operation the foetal heart could still be heard beating, but more slowly. Four days later

Dr. Duncan, having heard the fetal pulsation, drew off the liquor amnii with the aspirator, and then injected m. xij. of equal parts of water and liq. morph. hypod. into the foetus just over where the heart was heard. After this the foetal heart could not be heard.

The patient died two days subsequently. At the autopsy, twenty-six hours after death, the contents of the cyst were found very foetid, and the soft parts of the foetus itself were for the most part as if completely macerated, the bones being exposed. Almost all the internal organs were diffused in the surrounding fluid, or were diffluent. The heart was scarcely recognisable.

Such a record is positively discreditable to the art we practice, a series of ineffectual experiments were tried upon this poor mother and child, one after another involving fearful suffering, and finally double death, when probably both lives might have been saved by following the ordinary rules of surgical proceedings.

If the ovum perishes between the period of primary rupture and the viable period and becomes a source of danger it ought to be removed, but if it can be nursed through the time till the end of gestation it ought to be saved by abdominal section. If the patient presents herself only after the child is beyond the gestation period and dead, it ought to be removed, for it is a source of perpetual risk. Quiescent lithopedia are far too rare and suppurating ovum sacs far too common and far too fatal for us to recommend such a risk to our patient. Parry sums up the question very well in the following passage:—

“After the death of the foetus, and the restoration of the normal condition of the system, the retention of an extra-uterine foetus is not incompatible with a long and useful life, but a woman is never free from danger while she is carrying an encysted child. Violent exercise, injuries, blows, strainings, and similar mechanical irritations may be the exciting cause of inflammation of the sac at any time. Hence, violent pain, with fever and evidences of inflammation following these, always demand a cautious prognosis.

“Depressing diseases, as any of the continued fevers, or local affections which introduce a profoundly typhoid condition, endanger the woman by impairing the nutrition of the cyst, and leading to destructive inflammation.”

The earliest case of abdominal section for ectopic gestation which has been found upon record is that of Primerose, who operated in October, 1594. The history of this patient has become classical. She was twice pregnant with extra-uterine children—first in 1591, and again some time before 1594. The cyst of the first child opened spontaneously through the abdominal wall. The fistula was enlarged, and the child extracted by Jacob Noierus, a surgeon. This operation proving successful, Primerose removed the second child by abdominal section two months later. It is easy to imagine how he was led to perform the second and more

hazardous operation. Felix Platerus reported another successful case only three years later. After this we have found no indication that the operation was performed for more than a century. In 1714 Calvo reported a case in France, and in 1764 Bard another in America.—(*Parry.*)

Mr. John Bard was a surgeon in New York, and no one is known to have operated in that country before him. The patient was the wife of a mason, and the operation was performed several years before it was published, for Mr. Bard communicated an account of it to Dr. Fothergill in a letter which was dated on the 25th of December, 1759.

On January 14th, 1791, this operation was performed in America for the second time, the subject of it being a Mrs. Cocke, the wife of a Virginia planter. The operation, which was done by Dr. William Baynham, a country physician, was entirely successful. The same gentleman operated with the same happy result upon a negro slave on February 6th, 1799. This was the fourth American abdominal section for the removal of an extra-uterine fœtus. The third one was performed by Mr. Knight, and communicated to the celebrated Dr. Lettsom, by Dr. Mease, of Philadelphia, and published in 1795. Dr. Baynham's cases are well worth attentive study. They illustrate the intrepidity and good judgment so often displayed by the country surgeon, who, separated by long distances from his fellows, often has to act in the greatest emergencies without the counsel which he may earnestly desire. Almost a quarter of a century passed before the operation was repeated in America. On the 6th day of October, 1823, it was again performed by Dr. Wishart, likewise a country practitioner. The sixth American operation was performed on February 6th, 1846, by Dr. A. H. Stevens, of New York, a man who had all the advantages of a metropolitan experience.—(*Parry.*)

Sprengel, in his *History of Medicine*, vol. VII., p. 290 et seq. refers to the following authorities for cases of this nature—viz., Comax, a professor at Vienna, said to be the first who operated successfully by gastrotomy; Hector and Gassar, both of Augsbourg; Soligen, who is said to have practised the operation repeatedly; C. Denys, a French physician, who relates several cases of extra-uterine conception, followed by abscesses, from which fœtuses were extracted; Runge, a surgeon of Bremen, who operated on a woman in whose abdomen a fœtus had been retained eleven years; Spaering a Swedish physician, who, with a lancet, opened an abscess, and from the lower part of the abdomen extracted a fœtus of thirteen years retention; Breyer of Leipsic, and Weinhardt, both of whom operated successfully by gastrotomy; Professor Colomb, of Lyons, and Professor Josephus, of Rostock, both were unsuccessful.—(*Campbell.*)

Parry gives a number of tables which are intended to show the mortality of extra-uterine pregnancy reaching to and going beyond term, and submitted on the one hand to abdominal section, or left to nature on the other. But it is perfectly clear that no tables of abdominal operations of any kind are of the slightest value antecedent to the year 1878, when the whole practice of abdominal surgery was revolutionised by the final discontinuance of the clamp in ovariectomy; and further, it is quite clear that the heterogeneous collection of cases, of which rarely more than two are contributed to the list by the same operator, can have little or no value. In turning back over the records of the cases where the details are given, the great bulk of them have been operated upon when the patients were too far gone in illness, the result of accidental complications or suppuration of the sac, to give the collection any value whatever. The following are his conclusions. Of thirty cases in which gastrotomy was performed, or the breach dilated, twenty-eight patients recovered. In twelve cases of gastrotomy, performed after the suppurative process was well advanced, ten of the operations were successful. Of nine women operated on, however, during the existence of foetal life, or soon after its extinction, the whole died.

If these conditions had to be accepted there would be an end of the discussion concerning the saving of the child. I, for one, would say no more about it, and willingly would adopt some means of destroying the foetus; or I would watch till it died, and then, after waiting awhile, I should remove it. Parry seems to have been greatly impressed with the belief that the fatality attending the removal of living children was due to the "puerperal state," and therefore he advised waiting till the child had been dead some time. In fact, he divided the operations into "primary" and "secondary" on this principle—a most mistaken one. That puerperal women are especially susceptible to surgical influences is true enough; but our recent experiences make me believe that it is only true that they are specially susceptible to the influences of bad surgery and unskilful operators. If, therefore, we have a proceeding based on sound principles, and a skilful operator, I believe the puerperal woman has no more to fear from an operation than any others. My own experience in the Cæsarian operation and in the modern methods of amputating a pregnant uterus convinces me that this is so. I never succeeded in getting a woman through a Cæsarian section, and I concluded that it was the puerperal influence. But I know now that this conclusion was nonsense. As soon as I began to amputate the uterus all my patients recovered, and recovered easily, just as ovariectomies recover. I used to do the Cæsarian section merely to save the child, now I amputate the pregnant uterus to save both mother and child, and therefore I begin to look upon a man who does craniotomy as a person worthy of suspicion.

If this revolution has been effected about one puerperal operation, why may not the basis of scepticism be applied to Dr. Parry's tables and their conclusions? Further objections may be urged against them. First of all, the figures are too small for any just conclusion. Then the conditions of individual cases, when unearthed, are so dissimilar that they cannot with any justice be slumped together in tabular form. The great majority of the "primary" cases were operated upon "in extremis," whilst the secondary cases had been going on in chronic form, and were operated on by specially experienced men. Generally speaking, the cases of "primary" operations are only surgical curiosities of a somewhat horrible kind, and of no value whatever. Indeed, Dr. Parry practically admits all this about his tables, for he says (page 223), of the 62 cases tabulated in what he calls "primary operations" were performed for the removal of extra-uterine children, "30 lived and 32 died, a mortality of 51·61 per cent. It is doubtful, however, if this can be accepted as the true mortality after gastrotomy. This result is to be compared with that of the third table, which shows approximatively the mortality of extra-uterine pregnancy left to nature, or, to speak more correctly, allowed to progress without operative interference until nature had pointed out the way in which she intended to effect elimination by forming openings either through the abdominal walls, bowels, vagina, or bladder. Of these women, 52·65 per cent. perished, a mortality of only 1 per cent. in favour of gastrotomy. This is certainly a very poor showing for surgical interference in this unhappy accident."

The great, and a very important, qualification of this last statistical statement is entirely overlooked by Dr. Parry, and yet it is rendered perfectly clear throughout the whole of his writings on the subject that these cases are only the remnants, the mere survivals, of a vast number who died during the processes of suppuration; whereas a table of gastrotomies for living children, or children recently dead, represents no such residuum. To the mortality of the cases left to themselves there must of course be added a large number of those who died when their condition as recognised was beyond remedy, and this number I fancy vastly out-runs the number of the residuum.

Here I may speak of the application of the terms "primary" and "secondary" in connection with these operations, for which Dr. Parry is responsible, and in which I think he has committed a grave error. He regards as primary operations those in which the life of the child was considered in determining the time for interference, or in which the operation was performed shortly after its death, or near term; and as "secondary" operations he has placed all operations performed some time after the death of the child, and when the system of the mother had recovered to a great

extent from the "puerperal condition." It seems to me that these terms are most inappropriate and ill-used, and are certain to be most misleading.

In general surgery we have the words *primary* and *secondary* operations, more particularly in relation to the amputation of the limbs, used in different senses altogether, and so engrafted in professional parlance as to have become an almost necessary part of our conversation: certainly they are a great convenience. Used, however, as Dr. Parry has proposed they should be, they would be without meaning, and would necessarily cause a great deal of confusion. I would greatly prefer that if we were to speak of a *primary* operation for extra-uterine gestations, we should speak of the operation for arrest of the hæmorrhage at the period of *primary* rupture. My reasons for this are that, according to the ordinary meaning of the English language, abdominal section would then be certainly primary in point of date and also primary in the sense of being of greater importance—that is to say, of far more frequent necessity. Abdominal section for a viable child is secondary so far as date is concerned, and it is but of very little importance in the matter of frequency. If we take the technical meaning of "primary," as in amputations, to mean operation at the time of accident when the patient is collapsed from shock, pain, and hæmorrhage, then the patient who is suffering from collapse as the result of the violent pain and hæmorrhage which occurs at the primary rupture is surely in a condition much more resembling the state of the patient who has to submit to a primary amputation than anything else we can conceive. Most of my patients have been so, as much as if they had been cases of smashed knee-joint, and if left alone these cases must surely die. On the contrary, the women from whom I have removed viable children, or children dead by reason of having passed the ordinary period of gestation, have far more resembled cases of amputation for disease, and surely they are secondary operations in the technical sense. A further argument against the introduction of these terms in the relation proposed by Dr. Parry is that they would practically be determined only by saving the life of the child, and though this must be, as strongly argued by Dr. Meadows, the vital element in the further consideration of such an operation, it cannot be the chief element. Finally, by the adoption of these terms and by the argument he urges for their use, Dr. Parry would practically close the door against further advance in the possibility of saving the child. He says, "Notwithstanding the possibility of realising this happy result, and even of saving both mother and child, as has been done a few times, the primary operation cannot be too emphatically condemned."

I cannot admit such a conclusion for a moment, for the

material upon which he has based it is made up of such discordant elements, every one of which requires special qualification, that it is quite impossible to submit it to a satisfactory investigation. But even if we admitted his premises, his argument after all is based on a nine per cent. difference only against an operation which has saved child as well as mother; and this even is to be qualified, as I have said, by the mortality having been influenced by unintelligent delay and a vast amount of unscientific instrumentation. One of his cases was operated upon (unsuccessfully of course) after having been in false labour for over a week; and another (equally, of course, unsuccessful) after most strenuous efforts had been made for a whole day to deliver the woman by the forceps.

I therefore advocate the principle of saving a child who has survived the catastrophe of the primary rupture of the tube by being extruded into the broad ligament. If its existence is recognised during its life, the mother ought to be carefully guarded and watched till the false labour sets in, just as we watch a case for puerperal hysterectomy and seize the onset of labour or its early stage, as the most favourable time for both mother and child.

From this point of view, therefore, neither the time selected for the operation nor the details of the proceeding will be influenced save by two considerations: not to operate before the child is likely to be viable, provided the delay necessary does not prejudice the mother, and not to delay at all after the death of the child.

I specially lay this down for the purpose, amongst others, of excluding all operations for the removal of the child by vaginal section.

Dr. Herman has collected a series of twenty-three cases of vaginal section with fourteen maternal recoveries and only one child saved. I have unearthed a few more, but this kind of research is really of little value, for when the details of the cases come to be perused it is evident that there are so many points of discrepancy, that it is the merest nonsense to argue from such a collection to any general, still more to any particular conclusion.

That vaginal section is an unsatisfactory method for the purpose of saving the child is certain from the constantly recorded difficulties in getting the child out, and only two cases are known where the child has been extracted living, only two cases where it ultimately survived. The mortality of the collection is over 60 per cent., but this forms an argument not half so strong as the records of the tearing of the parts which was revealed at the post-mortem examinations, and the concealed hæmorrhage, which was nearly always the ascertained cause of death. My own experience of one case is quite sufficient, and I shall never, under any circumstances whatever, attack a sub-peritoneal pregnancy from the vagina.

I give that case in detail as published in the *Medical Times and Gazette* for 1873.

"On July 16th, 1872, I was asked by Dr. Call Weddell, of Bloomsbury, to see in consultation with him Mrs. T., aged 32, who had been suffering for some time from anomalous and perplexing symptoms. She had had one child, nine years previous to the above date, and for some months had been under the impression that she was again pregnant. For some days before I saw her she had been suffering from feverish symptoms, and her condition had evidently become very critical. A crescentiform tumour occupied the pelvis and iliac fossa, giving no special indication of its nature from above, save that at one spot less than half an inch in diameter, and situated about an inch below the umbilicus, there was a distinct bruit, which was much intensified when the pressure of the stethoscope was increased. Vaginal examination revealed a tumour behind the uterus, occupying the whole available space, immovable, and with a peculiar boggy feeling to the touch. The uterus was open, four inches in internal measurement, and presenting very much the characters as if a miscarriage at the third or fourth month had recently occurred. It was movable over the front of the tumour to a limited extent, the fundus being anteverted and readily felt over the pubis. On examination by the rectum I felt what I believed to be the knee of a child and the edge of the placenta.

"On July 17th the condition of the patient was manifestly much worse, and admitted of no further delay. We therefore placed her under chloroform, and I passed the needle of an aspirator into the retro-uterine tumour and evacuated a few ounces of fluid, which was undoubtedly liquor amnii. The diagnosis being thus placed beyond doubt, I followed the needle with a knife, and came at once on the knee of a fœtus. I enlarged the incision, and delivered a fœtus of about the eighth month, which had evidently been dead for some time. As soon as the child was born I passed my hand through the aperture and searched for the placenta, which I found situated in front. I also found that the cyst had been ruptured above, and that some intestine was extruded into the sac. There was no difficulty in removing the placenta, and no hæmorrhage seemed to result from its separation. It weighed when put together nearly three pounds, and was very hard and fleshy. The patient rallied from the chloroform, but sank in a few hours."

I am indebted to Drs. Sawyer and Weddell for notes of the post-mortem examination:—

"There was a considerable amount of clotted blood among the coils of the intestines. The uterus was enlarged and displaced, being carried so much to the left that its right margin corresponded to the middle line, and so much forward that its fundus projected

over the symphysis pubis. The cyst was large enough to contain two clenched fists, and was situated between the uterus and vagina in front, and the rectum and sacrum behind, the greater portion of it being to the right of the middle line. The cyst was extensively ruptured inferiorly, and the small intestines freely protruded into its cavity.

The lessons derived from this case and its failure are three:—First, that we should not delay interference after the child has come to the term or after it is dead; second, vaginal section should invariably give place to abdominal section, the latter being more scientific and less risky; and third, that the placenta should not be interfered with, but should be left to separate. I have profited by these lessons, and have since been able to operate on a case successfully.

In this case the temptation to remove the child from the vagina was very great, for it felt just as if it were separated from the fingers by the vaginal mucous membrane, and indeed there was little else. It felt as if a mere notch in the mucous membrane, and the child would come, and it is clear from the records that most of the operators have yielded to the temptation in similar conditions. But to do so is wrong, if for two reasons only. In the first place, as the placental relations are always chiefly pelvic, generally wholly so, the child cannot be dragged out without tearing tissues in which large sinuses have been abnormally developed, and through such structures, as they are unyielding, a child can be dragged only with much damage to the tissues, and likelihood of killing the foetus; then, if there be torn vessels bleeding, it is simply hopeless to expect to be able to find them and secure the bleeding-points.

A case illustrating the difficulty of delivering a child under such circumstances is seen in one of the two cases known where the child lived.

A woman who had been four days in labour, and exhausted by her efforts, but in whom no os uteri could be traced, though the head of a foetus was easily felt, was delivered by an incision five or six inches backwards and downwards through the posterior wall of the vagina. Liquor amnii escaped, and the hand was passed into the cyst to extract the foetus, which, however, could not be effected, though the abdomen was compressed by an assistant; but extraction was ultimately accomplished by forceps, and although the child, when born, was asphyxiated, it was nevertheless resuscitated. The operation was attended with little hæmorrhage, and scarcely any pain; and in two weeks the woman was going about, and no traces of the incision could be discovered per vaginam.—(An American case, *Medical and Surgical Review*, vol. ii., p. 132.)

Opening the peritoneal cavity from the vagina is a clumsy and risky method of proceeding under any circumstances, and whilst it

has no advantage whatever over the suprapubic method, it possesses many disadvantages. Dr. Herman has very well summed up a series of conclusions on this subject, which I here reproduce, pointing out, of course, that in the first four he gives indications of some amount of the usual confusion as to the periods of rupture, and what happens at them. In paragraphs 5, 6, 7 he lays down fatal objections to the vaginal operation, for after the death of the foetus—and the majority of cases will present themselves after this has happened—it is absolutely impossible to tell where the placenta is, nor is it always certain even when the child is alive. I have twice failed to discover its seat, even with my hands in the foetal sac. I am also of opinion that the most expert accoucheurs could not accurately ascertain the presentation of an ectopic foetus until the sac had been opened; at least, I once saw a very experienced man utterly fail.

Dr. Herman's conclusions are as follows:—

- (1) The operation of opening an extra-uterine gestation sac by the vagina early in pregnancy, before rupture has taken place, by the cautery knife or otherwise, is a dangerous and unscientific proceeding. Abdominal section ought always to be preferred to this.
- (2) Soon after rupture has taken place, when interference is called for to arrest hæmorrhage, abdominal section is more likely to succeed than vaginal.
- (3) When rupture has taken place, and the effusion of blood is followed by pyrexia, the indications for incision of the vagina are the same as those in hæmatocele from any other cause.
- (4) At, or soon after, full term, before suppuration has taken place, there may be conditions which indicate delivery by the vagina as preferable to abdominal section. These are—
- (5) When the foetus is presenting with the head, breech, or feet, so that it can be extracted without altering its condition; and
- (6) When it is quite certain, from the thinness of the structures separating the presenting part from the vaginal canal, that the placenta is not implanted on this side of the sac, and it is not certain that the placenta is not implanted on the anterior abdominal wall.
- (7) If the child cannot be delivered by the vagina without being turned, abdominal section should be performed.

These conclusions may be taken as practically fatal to vaginal section.

Parry has collected a number of cases from which he draws the conclusion that about seventy-five per cent. of the cases which go towards full term (that is, according to my views, of the cases

which survive primary rupture, and are developed extra-peritoneally) arrive at that term, and die at or shortly after it (if not destroyed by surgical interference), the minority dying at various periods in the progress. I have not tested the evidence on which he bases his conclusions, for I do not think they are of much moment. I am inclined to think that most of the women will not present themselves till they begin to believe that, having gone past their time and the child having ceased to move, something has gone wrong. Then it will simply be a matter of relieving the mother of a risky burden. If the child is living, an effort ought, in my opinion, to be made to save it. But whether the child be living or dead the steps of the operation will be practically the same, and the early part of the proceedings will not vary very much from the ordinary processes of any abdominal section, save in one particular—that the opening should not be made in the middle line, so as to avoid opening the peritoneum. In fact, the operation should not be an abdominal section at all, in the strict sense of the definition I have adopted. This fact has been the cause of much confusion on the part of one perverse critic, whose diatribes require no further notice or explanation.

To understand the motive of this avoidance of the ordinary incision in dealing with a case of ectopic pregnancy we must revert to the explanations already given of the process at the time of rupture, and to the views I have advanced, that all the full-term ectopic pregnancies are those which have grown in the broad ligament—extra-peritoneally. As they grow they separate the folds of the broad ligament, and finally lift the peritoneum slowly out of Douglas's pouch, off the rectum, sides and brim of the pelvis, off the posterior surface of the uterus, and off the back and sides of the lower abdominal walls as far round as a point corresponding to the cornu of the uterus on each side. The result of this is that the posterior and lateral levels of the reflections of the peritoneum are raised very materially, whilst the utero-vesical pouch is uninterfered with, and it remains as a long process, like the finger of a huge glove, running down in front of the gestation sac to its normal ending on the base of the bladder. This curious rearrangement of the peritoneum is similar to what we constantly find in cysts of the broad ligament, only the arrangement in them is less systematic, and the explanation of both is simple. The peritoneum is very easily lifted off any of the organs round which it is wrapped, if the process is slowly carried on. The growth of the ovum, therefore, easily lifts the peritoneum everywhere if the *pull* is direct; but when the pull comes to be indirect, as it must be the moment the top of the fundus is reached, the lifting of the peritoneum ceases, and the long tubular process is formed. As the growth of the ovum is not quite symmetrical, this tube is sometimes on one or other side, and sometimes in the middle, and

therefore it is that some of my operations for ectopic gestation at the full time have been abdominal sections, and some have not been. Therefore it is, also, that the opening in this case should be made not central, but well to one side.

This curious lifting of the peritoneum may, of course, be interrupted by a secondary rupture of the sac into the peritoneum, and we may find—probably shall—that many of the minor variations which are quite well established, such as invasions of the intestines by the placenta, are due to the same cause. We may also find, what I have already indicated as a probability, that direct primary rupture into the peritoneum of a tubal pregnancy of the twelfth week may end neither in the death of the mother nor in that of the child, but that it may go on developing in the peritoneum. I regard this as very unlikely, and as yet wholly unproven.

The lifting of the peritoneum also explains the intimate association which the foetal sac always has with the posterior wall of the uterus.

What was, on my part, originally a pure speculation concerning the methods of origin of the relations of the peritoneum and their details has been elevated into a series of indisputable facts by the fortunate experience by Dr. Berry Hart, of Edinburgh, of two bodies which contained ectopic pregnancies. The bodies were frozen and sections made, and these have been so carefully and elaborately described by Dr. Hart and Mr. Carter that I cannot do better than reproduce their original observations. I must acknowledge, at the same time, my indebtedness to these gentlemen, and to the proprietors of the *Edinburgh Medical Journal* for permission to reproduce an admirable illustration which will assist my readers greatly in understanding the description of the parts.

“The first specimen had advanced to between the fourth and fifth month. Dr. Hart saw the patient for the first time in the Buchanan Ward of the Royal Infirmary, and found her with a tumour the size of a cocoanut in the site of the right broad ligament, and reaching from the right iliac margin to the region of the recto-vaginal space, which bulged down markedly. The uterus was displaced to the left side of a two months' pregnancy. From the history of five months' amenorrhœa, and the occasional attacks of fainting and pain during that time, there was no difficulty in coming to the conclusion that we had here to deal with an extra-uterine gestation developing between the layers of the broad ligament. Two days after, the patient collapsed markedly, evidently from rupture of the sac and loss of blood. Eight hours afterwards, when she had somewhat rallied, an exploratory abdominal incision was made to see if anything could be done. Blood poured out whenever the peritoneum was opened, and on passing the fingers in, rupture deep down through the posterior lamina of

the broad ligament was found, a condition which did not admit of removal of the sac, inasmuch as it had developed down between the rectum and the vagina. The incision was therefore closed, and the patient sank in about ten hours.

"At the post-mortem, which was performed by Dr. Bruce, the bony pelvis and contents were removed and frozen, and in this way the relations were preserved—an impossibility if the parts are scooped out from the pelvis in the usual way.

"The pelvis, when frozen, was sawn in the mesial, right sagittal lateral, and left sagittal lateral planes, so as to cut sac and uterus.

"The following points are noteworthy:—

"In the mesial line the foetus and placenta are contained in a space bounded above by the laminae of the broad ligament, and below by the paraproctal tissue and that at the base of the broad ligament. The placenta is attached to the inner aspect of the tube and broad ligament, the foetus lying below. The vertical measurement is 4.10 cm., the transverse 8.7 cm.

"A similar section to the left of the middle line shows the enlarged uterus, and hæmatoma between the peritoneum and the rectum. The rupture had occurred through the posterior lamina, and low down.

"The uterus measures 10 cm. vertically, has a well-marked decidua, and the dip of the vesico-uterine pouch is only 5 cm. from the fundus. The left Fallopian tube and ovary are intact. This specimen, therefore, shows that the gestation, primarily Fallopian, had developed between the layers of the broad ligament and into the connective tissue between the peritoneum and the rectum. It was thus, prior to its intra-peritoneal rupture, entirely extra-peritoneal (v. Plate I., Figs. 1 and 2)."

The description here given by the authors conclusively establishes the process of primary rupture into the cavity of the broad ligament, for which I have already advanced very many arguments, as the explanation of the occurrence of the sous-peritoneo-pelviennne variety of Dezeimeris. The rupture, which was the immediate cause of death, was the secondary rupture into the peritoneal cavity which I have already described as having occurred in Nonat's case, and I think that if the operator had been bold enough to carry on his proceedings, had opened the sac, and sponged it out with a styptic in the fashion that I have described (p. 32), a more satisfactory ending of the case would have been arrived at. But the unfortunate termination is, at least to some extent, compensated for by the brilliant contribution to the elucidation of the pathology of ectopic gestations of which it has been the immediate cause.

The second specimen "was the unopened body of a female, aged 33, small and very emaciated, who was supposed to have gone a little beyond the term of normal pregnancy; but little

information of any kind could be obtained, as she was destitute, with no friends. The usual appearance of a multiparous pregnancy were present, without any varicosity of the venous system.

"On delivery into the dissecting-room the extremities were cut off; and the head and trunk, after a process of freezing by means of ice and salt, were cut into a series of sagittal mesial and lateral slabs, six in all, of about $1\frac{1}{2}$ inch in thickness. These slabs may be for convenience mentioned as 1R, 2R, 3R, and 1L, 2L, 3L—viz., the first slab on the right side, and so on.

"In the sagittal mesial section the saw passed almost exactly in the mesial plane of the body. There is nothing particular to remark about the brain and head and neck, the specimen presenting the usual appearances exhibited in sections made in this manner.

"In describing the gestation sac and its contents we shall try to avoid too minute details. The first great point to settle is the relations of the peritoneum to the sac, and it will simplify matters if we state the one broad fact brought out in the sections—viz., that the gestation is entirely extra-peritoneal, and that fœtus and placenta lie in extra-peritoneal connective tissue. The fœtal capsule and its contents, which occupy a great portion of the abdominal cavity, rise up to the upper margin of the second lumbar vertebra and extend well into the right half of the sections, pushing the intestines up and to the left. In front the tumour is separated above from the abdominal wall by the great omentum, while below, its wall is formed by the uterus; behind, it is separated from the posterior abdominal wall by a double layer of peritoneum. The uterus is much enlarged, the upper surface of the fundus being on a level with the upper border of the first sacral vertebra. It was pushed over to the left side, none being found in the right outer lateral section. The peritoneum has been entirely stripped away from its posterior and the upper part of its anterior surfaces, and from the fundus bands of tissue connect it with the upper and inner surface of the fœtal sac. On the left side of the fundus a small fold of peritoneum enclosed the left Fallopian tube and left ovary.

"The left Fallopian tube passed obliquely downwards from the left side of the fundus to the left iliac fossa, its fimbriated end being attached to the tumour.

"The left ovary was found below the Fallopian tube and left under-surface of the capsule, and is seen in the left lateral section 3" from the median line in the angle between the abdominal wall and the left iliac fossa (v. Plate III., Fig. 6). It measured $1" \times 1\frac{3}{8} \times \frac{3}{4}$ in thickness, and was enclosed in the same fold of peritoneum with the Fallopian tube. The ovarian vessels were greatly increased in calibre. *The right Fallopian tube and ovary cannot be identified, being taken up with the sac.* Owing to the surfaces of the peritoneum being more or less adherent,

it required great care to trace its general relation. In the mesial section it will be seen to be reflected from the inner surface of the anterior abdominal wall on the front of the uterus at the upper level of the pubes; the bladder lies below the lines of reflection, and is deficient of a serous covering. The front of the enlarged uterus is covered for a short distance, and the peritoneum is there reflected on the foetal capsule, this portion of its surface being rough and deficient of any serous investment. The foetal capsule is seen to be enveloped in front and above, and behind the membrane is reflected on to the rectum at about the level of the fourth sacral vertebra. On the left side the peritoneum passes from the left iliac fossa and covers a small portion of the upper part of the body of the uterus, and from this is reflected on to the capsule, forming a fold in which the left Fallopian tube and ovary are enclosed. The relations of the peritoneum to the other organs do not require any special remark. On the right side the peritoneum is lifted up. The foetus has thus developed beneath the peritoneum, elevating the folds of the broad ligament after distending them, and in its upward growth stripping the peritoneum up from the right side of the anterior abdominal wall for a distance of $7\frac{1}{2}$ in. above the pelvic brim. Posteriorly the deepest portions of the pouch of Douglas lie at the level of the fourth and fifth sacral vertebrae. The foetal capsule and its contents are found to extend into the hypogastric, umbilical, lumbar, and right inguinal regions.

"The sac can be studied in all its relations in the sections. Microscopical examination of its walls were made at various points—viz., at its uppermost portion, and also at the anterior abdominal wall below the peritoneal reflection.

"In the former part there was peritoneum and unstripped muscle showing the Fallopian tube origin; in the latter, connective tissue. The capsule was thus formed by connective tissue, bounded outside by the special structures displayed—viz., either by muscular abdominal wall or by peritoneum. On the right side of the body a deep dissection was made from the skin, and the cœcum and peritoneum found displaced up.

"*The Uterus.*—The cervix contained a plug of mucus, and in the flattened cavity of the uterus was found a small amount of disintegrated tissue. The foetus is situated below the placenta, and between the uterus in front and the abdominal wall behind. Together with the placenta, it is seen to be enclosed in a distinct capsule.

"The placenta consists of an oval-shaped and flattened mass of tissue situated in the abdominal cavity and extra-peritoneally, and lying above the foetus. Its long axis is directed up and down, and in the mesial section is seen to extend from the upper margin of the second lumbar vertebra to a little below the upper border of the first sacral vertebra. It is attached to the posterior aspect of

the anterior abdominal wall and outer surface of peritoneum. Where attached to the anterior abdominal wall, the veins there are enlarged.

"The diameter of its long axis is 13.5 cm., and its average antero-posterior measurement is 7.5 cm. Around it is a thin investment of connective tissue, and it is firmly attached at points, especially in front and above, to the surrounding capsule by bands of vascularised tissue. In the right sections a cavity is seen between the capsule and the placenta, which was filled with a mass of grumous blood and gases of decomposition, the position of which corresponds to a well-defined darkening of the skin of the anterior abdominal wall, as if the patient had suffered from a severe blow or fall. The foetus weighed 2 lb. 4 oz. without the umbilical cord. It was fairly well nourished, *but decomposition had commenced, especially at the lower part of the abdomen.*

"The consideration of these two sections shows, therefore, a special phase in the development of extra-uterine gestation. They demonstrate that a Fallopian-tube pregnancy may develop between the layers of the broad ligament, and may continue this extra-peritoneal mode of growth, stripping off the peritoneum from the uterus, bladder, and pelvic floor, until it becomes in great part surrounded by a peritoneal capsule derived from these organs. All this is done without any actual intra-peritoneal invasion. The placenta in the advanced gestation case is attached in front to the extra-peritoneal connective tissue, the veins there enlarging and acting like uterine veins. In this special cadaver, therefore, the gestation began probably in the right Fallopian tube, developed into the layers of the broad ligament, and grew extra-peritoneally, lifting up the peritoneum on the right side of the middle line, both anteriorly and posteriorly, and also stripping the posterior uterine wall and upper part of the anterior uterine wall. The extra-peritoneal tissue, with its blood-vessels, is therefore not only capable of forming anastomoses in abdominal aneurism, as Turner and Chiene have shown, but may attempt to carry on the functions of the maternal portion of the placenta.

"We have here what may be termed slow displacement of the placenta. At first it lay in the Fallopian tube, but the growing ovum has slowly pushed it up (a process attended with blood extravasation) from pelvis to abdominal cavity, until at last its upper edge is about ten inches from its original site. Part of this is due to growth of course. The uterus also has had its cervical portions elongated in the same way to three inches. These sections have an important bearing on the classification of extra-uterine gestation. Much has been written and little really demonstrated on this point. The Tubal variety is undoubted; the Tubo-ovarian has also been demonstrated; but the Ovarian is a very doubtful form. The Sub-peritoneo-pelvic or intra-ligamentous variety of

Dezeimeris, Tait, and Werth, is demonstrated in the second specimen, which also shows the ovary thinned out on the posterior lamina of the broad ligament. The presence of the ovarian structure in the cyst wall of an extra-uterine gestation has been brought forward as evidence of its being the Ovarian variety; it more probably shows that it is Sub-peritoneo-pelvic.

"The chief interest centres on the anatomical nature of abdominal gestation. The second case shows that this can be extra-peritoneal, a fact never hitherto demonstrated, although strongly contended for by Tait. We do not deny that we may have either a partial extra-peritoneal and intra-peritoneal variety, or an entirely intra-peritoneal variety, but we ask for actual proof of such. If it be urged that a purely intra-peritoneal form must exist because placenta has been found attached to the uterus and intestine, we answer that in the cadaver shown (Plate II.) the placenta has been attached to the portion of uterine wall where the peritoneum is stripped off; or it might have been attached to the other abdominal viscera, but yet, carrying a layer of peritoneum before it, be still extra-peritoneal. We, therefore, hold that the following varieties have been demonstrated, viz.:—Tubal, tubo-ovarian, sub-peritoneo-pelvic, sub-peritoneo-abdominal. An abdominal variety, partly intra-peritoneal and partly extra-peritoneal, is probable; a purely intra-peritoneal variety has yet to be demonstrated, and the same holds good as to the ovarian variety. Hitherto we have always regarded the peritoneal cavity as the site specially chosen by extra-uterine gestation, for its development, but we must now more closely scrutinise such in the light of this and similar cases."

I have placed in italics two sentences in this record. The first to the effect that the right Fallopian tube and ovary could not be identified, having been taken up by the sac. This clearly shows, as Dr. Berry Hart concludes, and as I have for years argued, that such a pregnancy as this is originally tubal; and that the tube is carried up to form the upper part of the cyst is due to the fact that the rupture through which the ovum escapes into the broad ligament takes place at that part of the tube which lies at the junction of the two laminae. The second point worthy of note is that even in this case decomposition had commenced, and that, therefore, had the woman been received in the clinical ward instead of the dissecting-room, a surgical operation would have been demanded.

DESCRIPTION OF PLATES.

PLATE I.

Fig. 1.—Sagittal lateral section (right) of pelvis, with extra-uterine gestation in right broad ligament.

Fig. 2.—Sagittal mesial section of same pelvis, showing uterus with decidua. This section demonstrates, inter alia,

Mort A. Carter.

Amniotic cavity

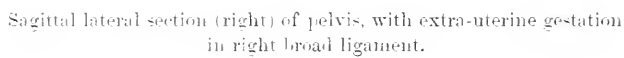
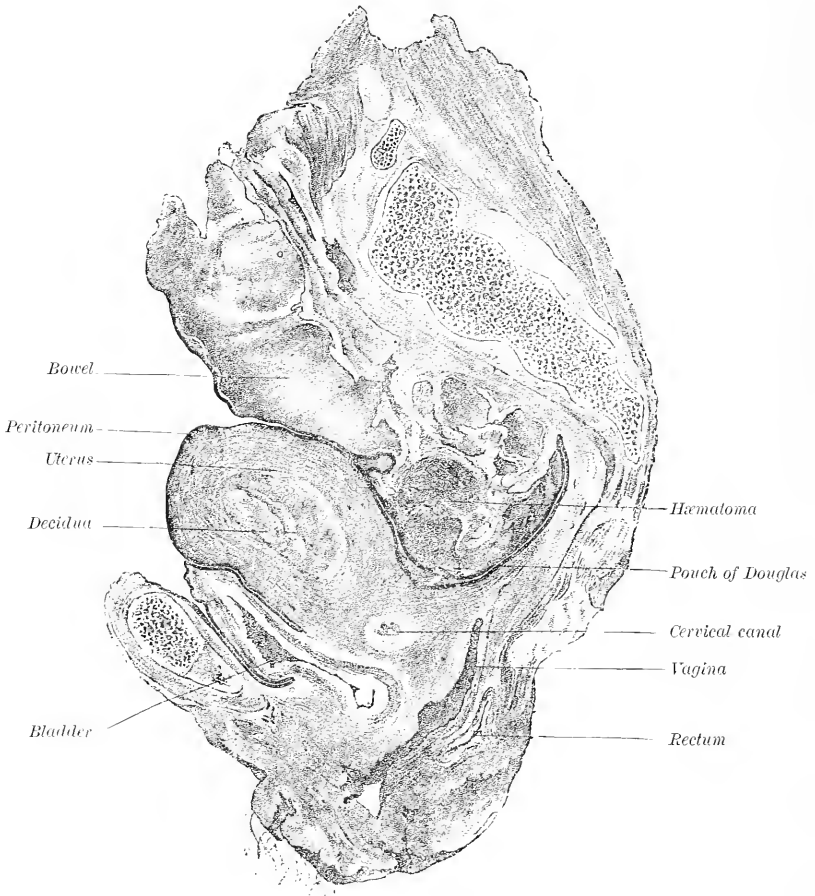


PLATE I.

(Hart & Carter.)

FIG. 2.

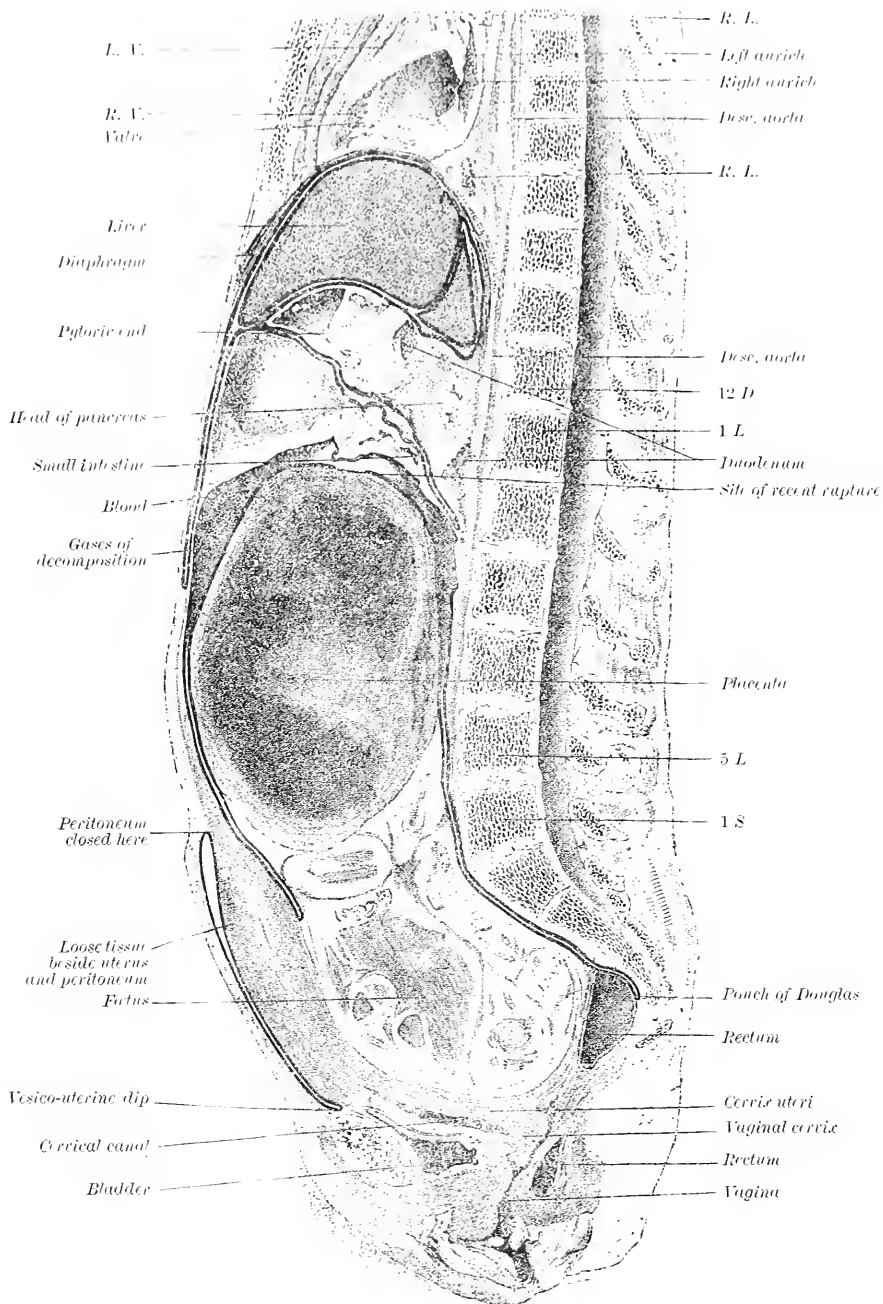


Sagittal mesial section of the same pelvis, showing uterus with decidua.

This section demonstrates, inter alia, that what is termed clinically retro-uterine hæmatocele may be hæmatoma.

PLATE II.

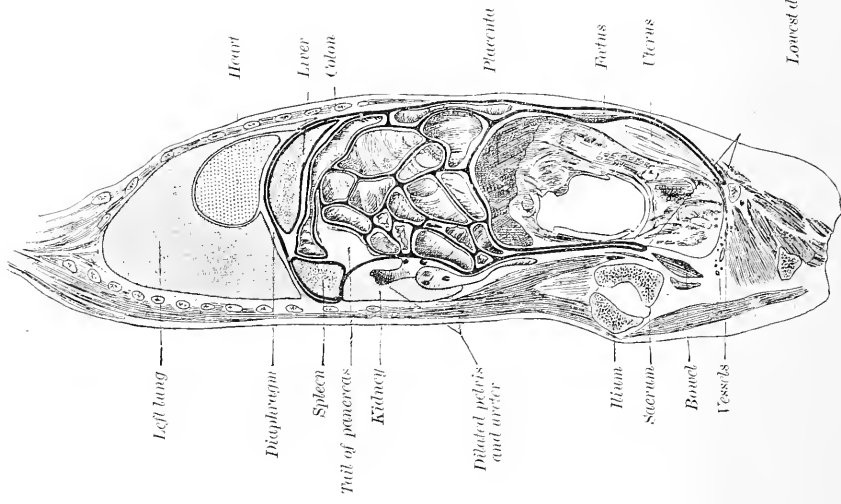
(Hart & Carter.)



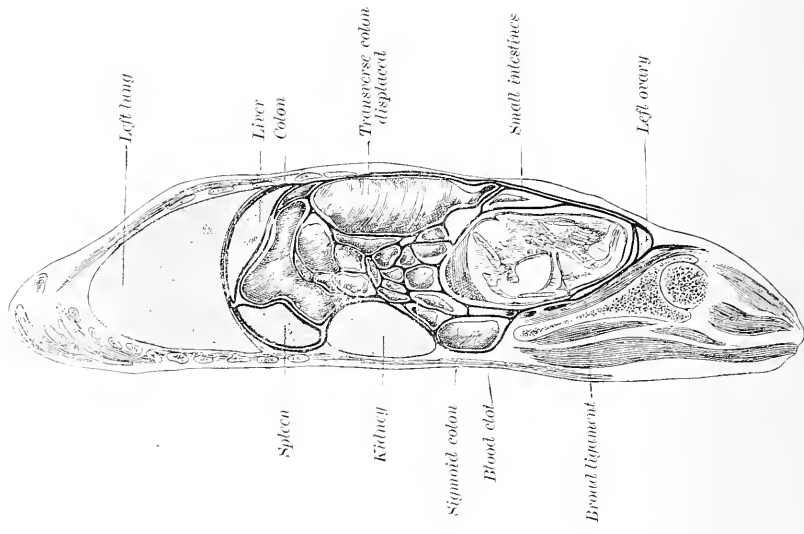
Sagittal mesial section of cadaver, with advanced extra-uterine gestation—
sub-peritoneo-abdominal (1 R).

PLATE III.

(Hart & Carter)



Sagittal lateral (2 L) of same.



Sagittal lateral (3 L) of same.

that what is termed clinically retro-uterine hæmatocele may be hæmatoma.

PLATE II.

Fig. 3.—Sagittal mesial section of cadaver, with advanced extra-uterine gestation—sub-peritoneo-abdominal (1R).

PLATE III.

Fig. 5.—Sagittal lateral (2L) of same.

Fig. 6.—Sagittal lateral (3L) of same.

Dr. James Braithwaite, of Leeds, records two cases in which he operated successfully, and he has given such interesting details (*British Medical Journal*, Jan. 3, 1885), all of which directly support the views I have advanced in the preceding pages, that I need offer no apology for quoting them at length.

The first case had symptoms of primary rupture at the third month of gestation, and was operated upon about a fortnight after a spurious labour at the full time, the operation taking place on May 5, 1883.

"The incision was central. No peritoneum was met with, and the sac was closely adherent to the abdominal walls. The child was lifted out by its feet, but it proved so large that it was necessary to extend the incision upwards another inch. This unfortunately detached the cyst from the abdominal wall, and a coil of bowel protruded into view at the upper part of the wound. The cyst was carefully stitched to the lower surface of the wound with a continuous catgut suture. The placenta was deeply situated, but to what part it was attached was not positively ascertained. The cyst was of considerable thickness, already black from decomposition, and lined with a smooth shining membrane (the amnion), which readily peeled off. After washing out the cavity with warm carbolic water the wound was closed with silver wire sutures, the cord being left hanging out at the lower end of wound. A large glass drainage-tube was also inserted. During the next three weeks the whole of the placenta came away through the lower part of the wound. The cyst came with it, and I recognised the catgut which had been used at the upper margin of the abdominal wall incision. Much of the black and putrid mass was removed by daily traction upon the projecting parts, but unless great care was used hæmorrhage occurred. When the whole of the placenta and cyst had come away the wound healed up rapidly, and the patient made a good though slow recovery, and she is at the present time as well as she was before her illness."

The extension of the incision probably opened the "finger-glove process" of the peritoneum, rather than separated the cyst wall.

“Case 2.—Mrs. W——, of Holbeck, a patient of Dr. Dodson’s, with whom I saw her in September last year, aged thirty-five, has been married ten years, but never pregnant until the present case occurred. Menstruation all her life quite regular and natural; the last period was about October 15th, 1883. On December 3rd, having missed exactly seven weeks, she was slightly unwell, and had at the same time, to use her own words, ‘a very violent pain’ in the body. The symptoms were such as would be produced by rupture of an early tubal gestation—viz., pain and collapse. She recovered from this, but the body went on increasing in size just as in normal pregnancy. At the end of August a sanguinolent discharge occurred, and this, therefore, may be taken as the time when labour would have taken place had gestation been uterine. The movements of the child, however, ceased to be felt about the end of the first week in August. By examination of the abdomen the outlines of the child were not perceptible, as in the last case, but some thick substance intervened, which subsequently turned out to be the placenta. This much increased our difficulty in the diagnosis. There was a projection outwards of the abdominal walls in the right inguinal region, which felt not unlike a foot. There were no fetal or placental sounds audible. The uterus measured only two inches and three-quarters, and the cervix was well open, so that the finger could be passed up to, but not through, the os internum. The pulse was weak, and the condition of the patient such that, being quite certain it was a case of abdominal extra-uterine gestation, we decided to remove the child at once. This was done on September 11th, 1884, at the Women and Children’s Hospital. The incision was central, and we came, as expected, directly upon the placenta, the edge of which, however, was found about two inches to the right of the incision. Careful separation of the placenta in this direction did not produce hæmorrhage. An incision at right angles to the first was now made, and the edge of the placenta being pushed back the feet of the child were seized, and it was removed without much difficulty, the placenta yielding without being torn or separated from its attachment to the abdominal walls. Whether the child was enclosed in a cyst or not we were not quite certain at the time of the operation; but, as proved afterwards, this was the case. There were no veins in the abdominal walls at the seat of the placental attachment, except just at the lowest angle of the central incision. These I was careful to avoid wounding; they were, however, only of small size. The wound was closed with silver wire, the funis being left out, and a drainage-tube inserted, both at the extreme right of the lateral incision. An attempt to separate the placenta with the finger and traction in about two weeks set up hæmorrhage and it was not attempted again until the discharge became very decidedly purulent at the end of six weeks. The whole of the placenta

which had not been removed, for some small portions had been, was at the end of six weeks separated by the finger and removed without much difficulty. It weighed thirteen ounces. The patient is still in the hospital, but is nearly well. In introducing the finger for removal of the placenta I felt the cyst walls, which appeared to be pretty firm and thick.

"The first thing worth remarking in the history of these cases is the occurrence of severe pain early in gestation, attended with some degree of collapse. This indicated rupture of the Fallopian tube, in which, up to that period, the fœtus had resided, and its escape in the first case into the interior of the broad ligament, and in the second into the peritoneal cavity. I assume that the explanation of these cases given by Mr. Lawson Tait is the correct one, and I believe it to be so—namely, that all cases are originally tubal, that rupture always occurs, but that this rupture may be in different parts of the tube; and if on the lower surface of the tube the fœtus is let down between the folds of the broad ligament, and then develops, the placenta retaining its original hold upon the interior of the tubal cyst; if the tube ruptures on its upper surface the fœtus escapes into the peritoneal cavity; and if the mother survives it develops there just as it would have done in the uterus. It seems pretty clear that in my second case the placenta was detached from its original position and took root again in a fresh one, and that the interior of the abdominal walls. This situation of the placenta is rare, and I think it may without much difficulty be diagnosed by the thickness of the structures intervening between the fœtus and the examining hand."

Dr. R. B. Maury, of Memphis, has recently published the details of the post-mortem examination of a case which completely confirms the conclusions of Hart and Carter; and now that the facts are known, doubtless, information will be abundant, and the old confusion will speedily end.

"The pelvic organs were carefully removed, and it was then seen beyond all possibility of doubt that the foetal sac was entirely extra-peritoneal, that the gestation had originated in the right Fallopian tube, and had developed between the folds of the broad ligament, downward to the pelvic floor, laterally to the pelvic wall, and upward into the abdomen.

"The ovum in its development had lifted the peritoneum off from the bladder and the anterior surface of the uterus, while the relations of the peritoneum to the posterior uterine wall and to Douglas's pouch were not altered.

"The sac extended quite to the pelvic and abdominal wall on the right side, but did not go beyond the left cornu of the uterus on the left.

"At the time of the operation it was observed to be covered by peritoneum, and this was clearly shown after death.

"The gestation was therefore entirely extra-peritoneal, and belonged to the variety, intra-ligamentous of Werth, or sub-peritoneo-pelvic of Dezeimeris.

"No trace of the ovary was discoverable in the structures belonging to the sac, but on the left side the ovary was found much shriveled and otherwise changed in appearance.

"This autopsy corroborates the view taught by Mr. Lawson Tait, that in extra-uterine pregnancy, no matter where the foetus may be found, its development begins in the Fallopian tube, 'and that it may become intra-peritoneal or extra-peritoneal, just as the tube happens to burst.'"—*Memphis Medical Monthly*, March, 1888.

We come now to consider the further details of the operation of removing a foetus developed in the broad ligament at or near or past the full time of gestation; and no variation on this point will make any difference in the essential details of the proceeding. The opening of the abdomen and sac should be, as I have said, to one side of the middle line, and the history together with the physical signs will probably enable us to decide on which side of the middle line the incision should be made. As the purpose is to avoid opening the uterine process of peritoneum, the incision should be made two or three inches away from the middle line and towards that side in which the pregnancy has been developed—if this point can be determined. When the sac is opened the foetus is to be removed carefully, so as to avoid tearing as much as possible; and if it is alive, it should be handed over to those specially detailed for this duty. The umbilical cord should be divided close to its placental origin, and the placenta should be emptied, as far as possible, of blood. The interior of the sac should then be carefully cleansed of all dirt and loose membrane, and then filled and washed thoroughly with clean water, and the stitches carefully placed in the wound so that when they are drawn tight the sac shall be hermetically closed.

By means of my syphon trocar the sac should again be washed out with warm water, and then the stitches drawn tight with the trocar (small sized) still in the sac. The syphon action should then be reversed and the sac emptied of water as much as possible, and the trocar removed; in so doing care should be taken that no air enters, and that the wound is hermetically closed.

I recommend this proceeding from the splendid results I have obtained by it in dealing with congenital cysts (*Trans. Gynecological Society*, 1887), strikingly different from those arrived at by drainage. It seems to me that the conditions of the two cases are very similar, and that the success in one may justify the same means being tried for success in the other. The crux of the discussion is, of course, the removal of the placenta, and I have tried all ways with it, and I am disposed to think that leaving it will be the best. I have already detailed a disastrous case where I removed it by vaginal

section. I have twice removed it, arresting easily what hæmorrhage there was by the application of perchloride of iron. Both children were alive and still live, and both mothers survived; but in both cases I was able to tie a big pedicle—the remains of the tube and broad ligament—which doubtless contained the bulk of the blood supply to the placenta. This proceeding I certainly should recommend in all cases where it is practicable, and from my own experience alone it seems certain that it will be possible in a considerable number of cases. But there are others, and I have published these, where such a proceeding was not possible, where the placenta was plastered flat on various structures to which it was intimately adherent, and from which it would have been removed only with great difficulty and much hæmorrhage. I confess under such circumstances I should hesitate before commencing its removal, but if I did begin it I should rush rapidly through with it, and follow separation with a sponge soaked either in strong vinegar or a solution of perchloride of iron. Such a process would be very risky, and I confess I should not like to face it, and for the further reason that I do not think it will prove to be necessary.

The alternative proceeding which I have adopted in these cases—all three mothers surviving—was to close the sac (closing the peritoneum in one case, when it had been opened as in Dr. Braithwaite's first case), all save an aperture through which I brought the umbilical cord and a drainage-tube. These three women all survived, but they survived a process of offensive suppuration lasting for months, and which nearly killed them all. One of them—as result of this profuse suppuration and of her own carelessness—has a ventral hernia, which contains most of her intestines.

I certainly, therefore, am not in love with this method of dealing with the placenta—for it deliberately induces the process of necrosis, which I do not in the least believe is necessary.

We must bear in mind that when the placenta has acquired adhesions outside the uterus it is in a condition altogether different from that in which it is placed when in contact with the endometrium. In both cases it is of course essentially a fetal structure, but it is far less so when it has its relations in ectopic pregnancy. When intra-uterine it is separated by a maternal layer of cells easily destroyed, and being constantly replaced, which are not present when its columnar villi invade intestines, muscles, and other maternal structures. Again, when the process of labour is going on in the uterus, every contraction of the organ tends to disturb the connections between the fetal and maternal tissues, so that when, finally, the complete contraction of the uterus is effected on the expulsion of the child, the placental relations are completely disconnected by the mere pressure of uterine contrac-

tion. No such disconnection occurs to an ectopic placenta. The histories of all the cases where an extra-uterine pregnancy has gone on for an indefinite period after the term of gestation without disturbance, show conclusively that all the tissues except the bones are capable of being digested and absorbed, and even the bones to a large extent yield to this powerful influence. The placenta, as a rule, is the first of the tissues to disappear, even despite the somewhat numerous instances, to which I have already alluded, where the placenta at first seems inclined to grow. For the majority of cases such a tendency at this period might, for a time at least, be disregarded, but even if it became from subsequent observation evident, in any particular instance that the placenta was growing after the removal of the foetus, we should have the advantage at least of having gained time in the treatment of the case; for nothing has so strongly impressed itself upon me in my experience of abdominal surgery, than that we may deal safely by secondary steps with conditions which, had they occurred to us in a primary stage, would certainly have led to unfortunate issues. I am therefore disposed, for the present at least, and until I am corrected by future experience, to advise that in dealing with an ectopic gestation in the advanced stages, we should deal with the foetus only, should empty the placenta of blood and close the wound hermetically upon it. The only exception would be where it can be dealt with largely by tying the broad ligament only to a relatively small extent requiring separation from the tissues with which it is associated. Campbell has to some extent anticipated my argument on this point in the following passage:—"As the placenta, when long retained, is destroyed during the suppurative process, except in some rare instances, and removed from the abdominal cavity with the other decomposed structures, or cannot be discovered, this discloses to us the important fact that the retention of the mass may be permitted without any detriment to the parent; while it can scarcely be doubted that the irritation which could not fail to be produced by groping for it among the abdominal viscera, or the hæmorrhage arising from its detachment, might be succeeded by formidable effects. At one period it was supposed that the placenta could not be suffered to remain in the abdominal cavity with impunity; but it may be asked, Can the retention of the mass be more injurious to the patient than that of a full-grown foetus, which, as we are now aware, may remain in the abdominal cavity for a long series of years without any injurious effect?" (p. 152.)

A case of great interest in the consideration of this point is narrated in the "Obstetrical Transactions" of 1887, by Dr. Champneys, in which the proceeding which I now recommend was more nearly carried out than in any other I have seen. The placenta was emptied of blood, but unfortunately the cord was not

cut short, but was allowed to hang out of the wound, dependence having been most unfortunately placed upon the so-called antiseptic system to prevent decomposition.

The operation was performed on the 19th of October, and upon the 19th of November the progress of the case is noted to the effect that "the incision was completely healed, but the lower abdomen markedly distended, and a swelling which was supposed to be the placenta considerably smaller" Subsequent events made it perfectly clear, however, that the patient was suffering from placental decomposition and resulting peritonitis, and she went on from bad to worse, with a pulse of 114 and temperature 104, and as high even as 106, to the 7th of January, when she died. On post-mortem examination the placenta was seen to be lying in the sac like a round ball, as large as a foetal head, and of a dark maroon colour. On passing the fingers round it a few bands and one or two adhesions were found between the placenta and the sac, but otherwise the placenta was detached. The blunder, of course, in this case was that the foetal sac was not opened a second time, and the placenta removed immediately at the outset of serious symptoms—that is to say, within five weeks of the original operation. It is perfectly astonishing that the patient should have been allowed to go on for very nearly six weeks after this, in a condition of sub-acute blood-poisoning, without any effort being made to save her. The lesson of the case, I feel strongly, is that we ought to make a preliminary effort, by leaving the placenta alone and closing the sac over it, to permit of its absorption. Should that not occur, we may then, by a secondary operation at such time after the first as may be indicated by the course of events, remove the placenta. This proceeding would then be rendered far less hazardous, at least in the matter of hæmorrhage, by nature's own process of the inflammatory occlusion of the bloodvessels. Certainly this is the reasonable method, as it seems to me, of dealing with this important question, the only one yet awaiting its proper solution; and its solution is forced upon me not only by my experience in ectopic gestations, but by my experience in a large number of other operations in abdominal surgery. Certainly it is not a question which will be settled by the tabulation of a number of cases mostly dissimilar in the extremest degree from one another, and incapable of leading to anything but confusion when paraded in the form of statistical evidence.

Campbell gives a very interesting list, and withal a very ghastly one, of instances which he has unearthed where there have been multiple extra-uterine gestations, and of instances also where they have been retained for very many years. As a mere matter of curiosity I reproduce it:—"Two patients had the product of three extra-uterine gestations in their abdomen at one time; in both

individuals all the decomposed structures were evacuated through the abdominal parietes, and each recovered. Nine women conceived once during the retention of the extra-uterine fœtus; two, twice; one, three times; one, four times; one, six times; and one seven times. There were two cases of contemporaneous intra- and extra-uterine gestation. In this variety two single women only are particularised. In seventy-five cases the fœtus was retained for the following periods—viz., three months in two instances, four months in one, five months in one, nine months in two, fifteen months in three, sixteen months in two, two years in eight, three years in seven, four years in four, five years in one, six years in two, seven years in three, nine years in one, ten years in three, eleven years in two, thirteen years in one, fourteen years in two, sixteen years in one, twenty-one years in one, twenty-two years in one, twenty-six years in two, twenty-eight years in one, thirty-one years in one, thirty-two years in one, thirty-three years in one, thirty-five years in two, forty-eight years in one, fifty years in one, fifty-two years in one, fifty-five years in one, and fifty-six years in one. In twenty-six patients the decomposed structures were evacuated through the rectum, and of this number six died. The fœtal structures passed through the abdominal parietes in twenty-nine cases, and three of the number died. In eight instances the remains of the fœtus were discharged per vaginam, and three of the patients died.”

True lithopædion—that is to say, where the fœtal sac has been encrusted, after more or less digestion and absorption, with a layer of the salts of lime, and has remained quiescent—is of remarkably rare occurrence. I have only once in my lifetime seen a case where it was suspected to have occurred. Dr. Fales, of Boston, has spent much labour in examining the literature on the subject, and he has found only eleven cases where the condition has been verified by post-mortem examination, and he adds a twelfth occurring in his own experience. As his paper is in a journal, the “Annals of Gynecology,” not very easy of access, and as the subject certainly has a considerable amount of interest, I venture here to reproduce his record.

“CASE 1 is reported by Dr. Brandt, in the *Edinburgh Medical Journal* for 1862:—

Miss A. was born	...	1778			
„ was married	...	1795,	at the age of	17	
„ first child	...	1796	„	„	18
„ second child	...	1801	„	„	23
„ pregnant	...	1804	„	„	26
„ third child	...	1808	„	„	30
„ fourth child	...	1815	„	„	37
„ died	...	1858	„	„	80

No history of the third pregnancy. The autopsy was performed September, 1858. The tumour weighed 1·8 kilo, and was 20·32 c.m. in length, 13·33 c.m. in diameter, 40·64 c.m. in circumference. It was a bony cyst containing a foetus, head uppermost, looking to the left and downwards. The spine and back were in apposition with the right side of the cavity; the head was decidedly compressed; the cord could be distinguished passing round the neck; the whole body was twisted in its long axis.

"CASE 2 is reported by Dr. Conant, in *New York Medical Journal*, May 10th, 1865, p. 140:—

"So far as known, the pregnancy, which was the first, was normal, labour-pains came on at the usual time, lasted a few days, and subsided. Subsequently she was afflicted with profuse and most offensive perspiration, which was almost unbearable to her attendants. After a time this disappeared, and slow recovery ensued, attended by a hard tumour in her side, which caused her no inconvenience other than a sense of weight. Subsequently she gave birth to three children. In June, 1863, thirty-five years after the accident, she died. The autopsy revealed a calcified foetus, extra-uterine seemingly, not enveloped with or in membranes; another hard mass, said to have been the uterus, was found in the abdomen, this, however, contained the remains of the placenta, in the opinion of Dr. Conant.

"CASE 3 is reported by Dr. Parkhurst in *Medical Times and Gazette*, vol. I, 72, p. 655:—

"She became pregnant in 1802; nothing unusual about the pregnancy was noticed; the catamenia ceased entirely; foetal movements appeared at the usual time. Premature labour was begun at eight-and-half months, as the effect of a fright. The pains gradually subsided, and for two or three weeks she was comfortable. Her health then began to decline, and for one-and-half years she was an invalid. After this period there was a gradual restoration to a condition of comparative health, though she was subject to attacks of severe abdominal pains at irregular intervals. She died in 1852, at the age of seventy-seven. The autopsy disclosed a tumour, the external surface of which was smooth and white, and composed of fibro-cartilage. Its weight was 3·6 kilos. There was no connection with the Fallopian tubes or omentum. The external surface of the foetus was encrusted with an earthy substance.

"CASE 4 is reported by Dr. Hans Chiari, *Vienna Med. Presse*, vol. 17, No. 38, p. 1092:—

"In this case symptoms of pregnancy were observed in 1827; but no birth followed them; the patient died at the age of eighty-

two, of pneumonia. At the autopsy the tumour was found to be attached to the walls of the uterus. It was about the size of a man's head, and here and there over its surface points of calcification could be detected. The uterus, right tube, and ovary were normal; the left ovary was wanting. The foetus was enveloped in a capsule, and was in a remarkably well-preserved state; the face, internal organs, and even the striæ of the muscles being recognisable. The placenta was found, but its position is not stated.

"CASE 5 is reported by Dr. Galli, in *Lo Sperimentale*, xxxix., 2, p. 135:—

"In this case, two children having been born, pregnancy occurred, for the third time, at the age of thirty. Foetal movements ceased after the eighth month. No birth followed. Subsequently, for a long period, she suffered from severe abdominal pain. Became pregnant again, and was delivered of a healthy male child. The product of the third pregnancy was carried for thirty-seven years. In her sixty-seventh year she fell, and probably disturbed the lithopædion, as a violent peritonitis intervened, from which she died. The autopsy revealed a well-formed lithopædion; but nothing further is stated.

"CASE 6 is reported by Dr. Plexa, *Monatschr f. Geburtsh*, xxix., 4, p. 242:—

"In this case symptoms were manifest which caused the diagnosis of extra-uterine pregnancy to be made. There were repeated attacks of abdominal pain, accompanied by fever. These gradually subsided, and strong hopes were entertained that this case would eventuate in a lithopædion. After one and a quarter years, however, a peritonitis ensued, from compression of the intestines between the tumour and the abdominal walls, which caused the patient's death at the age of forty. At the autopsy it was found that the foetus had entered the abdominal cavity by the bursting of the left Fallopian tube. The right ovary and tube were normal. The colour of the foetus was dark-brown, and calcification had begun.

"CASE 7 is reported by Professor J. Van Graau and Dr. Schrant in *Genees. en Heilkunde te Amsterdam*, ii., 1, pp. 17-96:—

"The patient was married at twenty years of age. Had seven children and three miscarriages. Twelve years before her death she noticed a gradually increasing swelling of the abdomen. The tumour was distinctly movable, and appeared to be adherent at the umbilicus. A diagnosis of lithopædion was made; and, at her death, at the age of forty-two, in the Amsterdam Hospital, this

was confirmed. The tumour was free, except at the front, where it was attached to the abdominal walls. The fœtus was developed in a calcified membrane; its head was situated at the umbilicus, the back towards the left hypochondrium; arms and legs drawn towards each other, and to the right. The uterus was in the lower pelvis, and was normal. The left ovary and tube were also normal. In the place of the right ovary there seemed to be a cyst, filled with a brownish substance, attached to the tube. After the covering was stripped off the fœtus was seen with the head, legs, and arms drawn towards each other. The internal organs, muscles, and other structures were easily recognised.

“CASE 8 is reported by Dr. Wagner, *Arch. der Heilk.*, vi., No. 2, p. 174:—

“The patient was a widow, sixty-eight years old. At the age of twenty-four she had given birth to five children. In her thirty-seventh year she again became pregnant, but was never delivered of the child. Labour-pains were not present. For a long period the abdominal enlargement remained constant in size, and Cæsarean section was advised. Finally, the tumour began to grow smaller; her menses returned, and fair health was experienced, the only complaint being of a feeling of weight in the abdomen. At the autopsy the tumour was found to fill the lower pelvis, and to be attached to the bladder, rectum, and uterus. The tumour weighed three-quarters of a pound, and was about the size of a man's head. It was covered by a yellowish membrane. The left tube and ovary seemed to be growing from the tumour, the uterus being pushed from the right. The fœtus was of female sex; the head was much drawn to the right, and bent upon the thorax. The skull was markedly compressed, the bones overlapping; calcification was present, but not uniformly. The various organs and muscles were not distinguishable, being changed to a fatty mass, which contained hæmatoidin crystals.

“CASE 9 is reported by Dr. Bossi, *Sitzmeister d. Vereins d. Aertze in Steirmark*, xi., p. 37:—

“In this case a lithopædion was diagnosed in 1868. During the years 1869 and 1870 abortion was induced several times. The operation was repeated in 1872, with a fatal result, peritonitis following. The autopsy revealed a pear-shaped tumour about the size of a man's head, covered with a capsule, which was very thick and hard (calcified). Portions of the fœtus were in a natural condition, and portions were changed to adipocere, some of the bones being entirely denuded. The tumour communicated with the rectum by a small opening. The uterus and tubes were normal. Right ovary atrophied, left one adherent to tumour.

"CASE 10.—'Tübingen Inaugural-Abhandlung,' von Wilhelm Keiser.

"The lithopædion was found in a woman ninety years of age, in 1720. In 1674 she had all the symptoms of pregnancy, foetal movements being very noticeable. At the expiration of nine months labour-pains started up; the membranes ruptured. Pains continued for two weeks, and then gradually disappeared; the foetus having apparently escaped into the abdominal cavity, after rupture of the uterus. Two children were subsequently born. The autopsy revealed a large tumour, 13·5 c.m. in diameter, covered with a capsule so hard that a knife could not cut it. The stroma contained an exudation in which lime-salts were deposited. The skin of the foetus was well preserved, covered by epidermis more or less calcified. The muscles could not be recognised, having been changed to a 'soft substance' (adipocere). The brain was a blackish-brown mass, which was pulverulent and easily melted; the membranes were of a leathery consistence. A citron colour was diffused throughout the entire structure. The reports concerning the position of the tumour are not trustworthy.

"CASE 11 is reported by Smellie in his 'Collection of Cases and Observations in Midwifery,' vol. ii., p. 65 :—

"The patient was pregnant in 1731, with the usual signs. At the sixth month foetal movements ceased, as the result of a fright. Under treatment she discharged a mass which was thought to be a part of the placenta, as well as a small amount of fluid. There was no decrease in the size of the abdomen. In July, 1733, two years and two months from her first pregnancy, labour-pains returned, with an apparent rupture of membranes. At this time the child was found in the abdomen. In January, 1734, she became pregnant, and was delivered October 28th. She was again delivered October 22nd, 1735, also October 9th, 1738, and June 17th, 1741. She was admitted to Guy's Hospital October 14th, 1747. She died November 7th, 1747. The autopsy showed the abdominal contents to be nearly in their natural state. In the right pelvis was a child, attached to the ilium and neighbouring membranes by the peritoneum, in which the tube and fimbriae were apparently lost. The foetal integument had become partially calcified.

"CASE 12.—In giving the history of this case I hoped to quote from the record-books of the physician in attendance at the time of the accident, who, as I understand, took extensive notes; but I am unable to do so owing to his death a few years ago, and the subsequent destruction of his records. I am fortunate, though, inasmuch as such information as I have of the case comes from a twin sister, who is still a remarkably vigorous woman, both

mentally and physically, and whose statements, as far as they go, are undoubtedly correct. Mrs. A—— was married September 24th, 1844. She never had any miscarriages. She was delivered of a perfectly healthy child, January 29th, 1848. Early in January, 1856, she became, as events proved, pregnant again, though her condition at the time was merely surmised, as menstruation continued to be present, and, in fact, existed, with more or less regularity, throughout her entire pregnancy. It was not until the middle of May that the attending physician made a positive diagnosis of pregnancy, basing his opinion on foetal movements, which became manifest at that time. Early in March, while visiting friends, she fainted, vomited, and complained of epigastric pain. There was no flowing at this time. The following day she rode home, a distance of four miles. Directly after this she had three 'inflammatory fevers,' characterised by abdominal pain, excessive tympanites, and uncontrollable nausea and vomiting. During one of these attacks an abscess formed just above the pubes, which opened, but did not discharge much, if any. Counting from the middle of May, when foetal movements began, October 1 would be the probable date of confinement. About that time the physician was summoned, not on account of labour-pains, as she never had them, but on account of excessive and painful movements of the child. These were always very marked, and caused her the utmost inconvenience. As she expressed it, she felt more life with this child in two hours than during her entire previous pregnancy. October 13 the physician was again summoned for the same reason as before. At this time 'something was rubbed on the abdomen,' after which the movements grew less and less, and finally ceased. For the following ten years she was an invalid, though nothing very explicit could be obtained as to her condition. She was generally miserable, and had a number of attacks of abdominal pain at irregular intervals, sometimes accompanied by icterus. During this period the tumour very gradually decreased in size, finally remaining stationary, and causing no trouble other than a feeling of weight when standing or walking too long. Her health was fair until 1883, when a malignant growth attacked her larynx, which eventuated in her death, December 24, 1886. The autopsy was performed December 26, 1886, Drs. Bill and Metcalf assisting. The body was very much emaciated. The tumour was apparently situated in the median line, with its most prominent point at the umbilicus, but on palpation it was found to extend downwards and to the left. On making the incision it was found to be adherent to the abdominal walls, and it seemed as though it would have soon made its way through, either from pressure or ulceration, so thinned had the structures become at the point of its adherence. The position of the tumour may be best described by borrowing

the obstetric expression, sacrum, left anterior, though it was entirely out of the pelvic cavity, the base of the skull being on a level with the umbilicus. It was almost lying loose in the abdominal cavity, the only points of attachment being the one just referred to, to the abdominal wall, what was probably the umbilical cord, and some small adhesions to the intestines. These were ranged round the tumour, none in front of it, and were one mass of adhesions, forming, with the abdominal wall, a cavity, as it were, containing the tumour. The umbilical cord (?) passed directly downwards, enclosing the uterus, and then gradually fading out into the peritoneum. Nothing that would answer for a placenta, or the remains of one even, could be found. Roughly speaking, the parts of the fœtus were normally disposed, the thighs and arms being flexed on the abdomen and chest respectively. The left leg was rotated slightly outwards, as well as extended; and the forearms, instead of being crossed, were more or less parallel with the long axis of the body, the hands being placed well up beside the head. The tumour weighed $2\frac{3}{4}$ lbs., was $8\frac{1}{2}$ inches long, and $12\frac{1}{4}$ inches in circumference. The cross section showed it to consist of a fœtus and its envelopes, the process of calcification being especially marked in the membranes. The uterus, Fallopian tubes, and ovaries were also removed, but furnished no points of importance. The autopsy suggested an extra-uterine pregnancy of the abdominal variety; but the history points rather to one of the tubal variety, primarily. To epitomise the various dates:—

Mrs. A—	—	was married in	...	...	1844.	.
First child	...	...	...	...	4 years later.	
Second pregnancy	...	...	...	...	8	" "
Probable rupture of cyst and peritonitis	...	...	...	...	at the third month.	
Death of fœtus	...	...	...	...	at the ninth	"
Period of ill health	...	...	...	...	10 years.	
Period of health	...	...	...	...	27	"
Death from cancer of larynx invading the lung, at the age of 67."						

We are quite justified in concluding from such records that Campbell and Parry are correct in their belief that a "quiescent lithopædion" is a very rare occurrence, and that a woman with the remains of an ectopic gestation sac in her abdomen or pelvis had far better have them removed.

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